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CONTENTS.

	Page.
Headquarters of the Mining Industry	193
The United Alkali Company	193
Proposed International Bimetallic Meeting	193
Situation in the Cœur d'Alene	193
Award of the Bessemer Medal	193
The New Carnegie Process ... R. W. Raymond	194
Gold-Bearing Claims in the City of Tacoma, Wash	194
Gold Production of the Witwatersrand	194
The Schafer-Heinemann Accumulator	195
British vs. American Iron and Steel Trade ... James Bowron	195
A Possible Explanation of Kernel Roasting ... G. McM. Ross	195
The Lake of the Woods Gold District ... W. O. Ross	195
Coal Consumption in the Desilverization of Lead ... H. O. Hofman	195
Dividends Paid by Mining Companies	195
The Sampling and Measurement of Ore Bodies in Mine Examination ... Edmund B. Kirby	196
Solubility of Basic Slag ... C. H. Ridsdale	197
Abstracts of Official Reports	197-200
Production of Precious Metals Since 1492	198
*Ore-Washing at Monteponi, Sardinia	199
The Australasian Gold Yield of 1894 ... John Plummer	199
Navy Tests of Birmingham Coal	200
*A New Electric Mine Hoist	201
Patents Relating to Mining and Metallurgy	202
Personal, Obituary, Societies, Technical Schools, Industrial	203-204
Notes: Units of Electrical Measurement, 200—A New Diamond Field, 201—Joule's Thermometers and the Mechanical Equivalent of Heat, 201—The Price of Ozone, 202—The Scotch-American Oil Combine, 202—A Large Derrick, 202—A New Coal Port for South Wales, 202—Preparation of Sprouting Graphites in the Electric Furnace, 202.	

* Illustrated.

MINING NEWS.
Alabama ... 204
Arizona ... 204
California ... 204
Colorado ... 204
Florida ... 205
Idaho ... 205
Kentucky ... 205
Maryland ... 205
Michigan ... 205
Minnesota ... 205
Missouri ... 206
Montana ... 206
Nevada ... 206
New Mexico ... 206
Ohio ... 206
Pennsylvania ... 206
Utah ... 207
Washington ... 207
West Virginia ... 207

FOREIGN MINING NEWS.
France ... 207
Madagascar ... 207
Mexico ... 207
South Africa ... 207
LATEST MINING NEWS ... 208
MARKETS:
COAL:
New York ... 208
Buffalo ... 209
Chicago ... 209
Pittsburg ... 209
IRON:
New York ... 209
Buffalo ... 209
Chicago ... 209
Pittsburg ... 209
Philadelphia ... 210
METALS:
Gold & Silver 210
Other Metals. 211
CHEMICALS AND MINERALS.
New York ... 212
Liverpool ... 212
MINING STOCKS:
New York ... 212
Boston ... 212
Salt Lake City 212
San Francisco. 212
London ... 213
Paris ... 213
Dividends ... 213
Assessments ... 213
STOCK QUOTATIONS:
New York ... 214
Boston ... 214
Duluth ... 214
Aspen ... 214
San Francisco ... 214
Santiago, Chile. 214
Denver ... 214
Philadelphia ... 214
Pittsburg ... 214
London ... 214
Coal Stocks ... 214
Ind. and Trust ... 214
Colo. Springs ... 214
Helena ... 215
Shanghai ... 215
Baltimore ... 215
Salt Lake City. 215
Paris ... 215
Mexico ... 215
CURRENT PRICES:
Chemicals ... 215
Minerals ... 215
Rarer Metals ... 215
MINING CO'S ... 216
ADVT. RATES. 18
ADVT. INDEX. 15

THE HEADQUARTERS OF THE MINING INDUSTRY.

We have great pleasure in announcing the opening of headquarters, and cordially extend to our friends from all parts of the world an invitation to make use of them. They will find here files of a great number of papers from the mining districts of this and other countries, and books of reference which can be consulted for information on any question in which they may be interested.

Visitors can have their letters addressed in care of "The Engineering and Mining Journal," P. O. Box 1833, New York, and will find in the headquarters every convenience for correspondence.

We have several times referred to the embarrassments of the United Alkali Company, of Great Britain, and to the probability that the stockholders had seen the last dividend they are likely to obtain. Over capitalization and the introduction of improved electrolytic processes have left the company in a very undesirable condition. In 1893 a dividend of 5 per cent. was paid on ordinary shares, but it is now announced that no dividends will be made for 1894 on the ordinary stock, although the company will be able to pay the amount due to the preferred stockholders for that year.

On the other hand, it is announced that Brunner, Mond & Co. will pay 30% on the stock for 1894, and carry forward a balance of £89,000 to the current year. The profit balance is larger than for 1893, but it has been considered better instead of increasing the dividend to keep a larger cash balance in hand, in view of probable additions to the working plant.

The various indications of the growth of feeling in behalf of bimetallism which we noted in this column last week, and especially the vote of the German Reichstag in favor of a new international conference, have had their effect in England, and this week Parliament has voted in favor of a motion submitted by Mr. Everett favoring an international agreement, and the holding of a new monetary conference. The result is favorable to an unexpected degree, and there seems little doubt now that such a conference will be held.

If Germany, England and France are represented, our own government will certainly send delegates, and there seems no doubt that all the leading commercial countries will join. The latest one to intimate its agreement is Austria-Hungary, a cable to-day announcing that the government will be willing to accept the German proposal for a conference. The new meeting will be held under entirely different circumstances from those which marked the assembly of the Brussels conference, and there is a hope that some definite result may be secured.

In our issue of February 16th we referred to the reported sale of the Tigar and the Poorman mines in the Cœur d'Alene district, in Idaho, to a London syndicate. Since then, rumor has also included the Gem and the Frisco mines in the sale; but, on the other hand, local authorities have asserted that the whole deal had fallen through. Our last advices, however, are that the sale of the Poorman and the Tigar will be carried out; but it is most probable that no sale of the Gem and the Frisco properties will be made, at any rate, for the present.

Meantime the Cœur d'Alenes continue in pretty bad condition. The Gem has been added to the list of large producers which are shut down, the cause of its closing being the continued low prices of lead and silver, combined with high wages, while the exhaustion of the richest ores have made closer economy in working necessary than is possible under the existing conditions. The morning mine continues closed, and is not likely to be reopened unless there should be a much larger increase in prices than there is any reason to expect. In fact, there seems every reason to believe that the Cœur d'Alene will make but little addition to the mineral output of Idaho this year.

The Bessemer medal awarded by the British Iron and Steel Institute is very properly esteemed as the highest honor that can be conferred on those who have distinguished themselves in the iron and steel industries. The awards are made for merit without regard to nationality, and several Americans have been honored by the British Institute in this manner. We are advised officially that the Bessemer medal for 1895 has now again been awarded to an American, the distinguished metallurgist, Mr. Henry Marion Howe, ex-president of the American Institute of Mining Engineers. Mr. Howe's magnificent work on the "Metallurgy of Steel," known all the world over, and his many other valuable contributions to the industry, demonstrate that never before was this great honor more worthily presented, for to no other living metallurgist is the industry so deeply indebted. We congratulate both the British Iron and Steel Institute and Mr. Howe on their honors.

This medal has been conferred on but four Americans: Peter Cooper A. L. Holley, Abram S. Hewitt, and John Fritz. Among the distinguished Englishmen to whom it has gone in the past are: Sir Lowthian Bell, Sir C. William Siemens, R. F. Mushet, John Percy, Sir Joseph Whitworth, Sidney Gilchrist Thomas, E. Windsor Richards, and Lord Armstrong.

"THE NEW CARNEGIE PROCESS."

In view of the newspaper accounts of the so-called "new Carnegie process," by which an armor plate 17 inches thick has been Harveyized, and then rolled down to 14 inches before hardening, it may be well to point out that there is nothing new in this procedure.

Early in the summer of 1891 the Ordnance Bureau of the United States Navy Department ordered from Carnegie, Phipps & Company and the Bethlehem Iron Company, certain armor plates, to be Harveyized under the superintendence of the Harvey Steel Company. These were the first Harveyized plates with which either of these establishments ever had anything to do. They were manufactured by both concerns in accordance with the prescriptions of the Ordnance Bureau.

The plates ordered of the Bethlehem Iron Company were three in number: the first of nickel-steel; Harveyized, the second of nickel-steel not Harveyized; and the third of simple steel containing no nickel and Harveyized. It was specified that the first and third plates should be Harveyized at a thickness of 12½ in., then reduced to 10½ in., and then annealed and hardened.

From Carnegie, Phipps & Co. five plates were ordered; the first and second of nickel steel, differing only in carbon contents, and both Harveyized; the third and fourth, of simple steel not Harveyized, and differing only in carbon contents; and the fifth of simple steel, Harveyized. It was specified that the first, second and fifth plates should be Harveyized at the thickness of 12½ in.; then reduced to 10½ in., and then annealed and hardened.

It will scarcely be claimed that the application of this precise procedure to plates 17 in., instead of 12½ in. in thickness, constitutes a novelty.

R. W. R.

GOLD-BEARING CLAIMS IN THE CITY OF TACOMA, WASH.

Under the present, as well as the last administration of the Interior Department, State titles to vacant sections 16 and 36, donated under the general land laws to the newer States for educational purposes, or, as a basis, for public school funds, have frequently proved anything but a boon. They have become the natural and easy prey of landgrabbers whenever they seemed to be of value. Especially in the vicinity of growing towns were such sections filed upon at an early stage of town development, wherever a pretext could be formed for plausible mineral applications. Such applications, on file previous to the donation act, have usually been granted either for lack of resistence on the part of the State, or because the mineral claim was worth so much that it became a corruption fund to influence those in position to facilitate the grant of a patent to land office attorneys and others skilled in getting things through the departments. These adepts are wont to follow their briefs and papers from hand to hand among the so-called law clerks of the department with all the zeal inspired by contingent fees or by a fractional interest in the property at stake.

The recent decision of the placer claims filed by one McBride on School Section 16 within the city of Tacoma, Wash., is an illustration.

After a second hearing before the local land office at Olympia and a second reference to the General Land Office at Washington, the claims in question, six in number—covering 120 acres of city-improved property, have been affirmed by the Commissioner of the Land Office. The preliminary decision of the land office at Olympia in favor of the mineral applicant was most surprising in view of the testimony heard by these local officers.

From trustworthy evidence submitted to us, it appears that the State showed by credible and experienced experts that no gold in appreciable quantities has been discovered on the several claims, except what was fraudulently introduced. The foreign character of the gold exhibits was proved by the fact that it was not only a miscellaneous aggregate in point of size, crystallization and color, but was mostly amalgamated. It was obvious that the granules alleged to have been native to the ground at Tacoma were, in fact, amalgamated material from different river washings like the Fraser, Columbia, etc., and bore the marks of having passed through riffles. Other exhibits were introduced which were artfully prepared for purposes of the hearing by panning with quicksilver so that amalgamation should be incidental to its separation.

One witness testified to an attempt at bribery and "salting." Though denied by the implicated party, this was not disproved. Quicksilver was found in pannings not particularly guarded against trickery, and again in most of those made by the applicant's party, wherever inspected by the State's experts.

Its occurrence as globules doubtless arose from the attrition and rough treatment of small amalgams in panning, along with pebbles and iron sands. It was sought to explain its presence by saying that quicksilver had once been freely used on the ground, and had either recondensed in concrete form or else had been spilled in such quantities as to appear in nearly every pan taken from different parts of the ground near the grass roots. The inspector-general of local land offices, who was detailed from Washington to superintend the practical examination of the ground, appears to have actively sided with the landgrabbers. He was the first to volunteer as a witness for the mineral applicant, in which capacity he proved willing and eager, and even claimed to be an expert in the mining of the precious metals. An engraved and published map of Tacoma showing the urban environment of the mineral claims was ruled out of the hearing by the register.

The glacial drift of the Puget Sound basin, as of other sections, contains no gold in appreciable quantity. Colors of gold set free from pyrite are occasionally met with in the pannings, but it takes from 500 to 600 of these to make the value of one cent. Assays of pannings from unsuspected ground at Tacoma gave only negative results. A single thin sheet of hardpan at water level, below 150 ft. of cover, afforded the only trace of gold, not more than three cents per cubic yard. In comparison with such an occurrence the red alluvions of Virginia would, measure for measure, be a regular bonanza.

In the first proceedings the son of the land commissioner was the attorney of the mineral applicant. Abundant evidence has been, in vain, laid before the department showing the employment of fraudulent practices in the interest of the applicant, yet the decision is in his favor and against the State. The 120 acres in question were at one time counted to be worth at least one million dollars for building lots, and this apparently has been sufficient to convince those who were charged with the determination of the point that the property is "gold bearing."

The domination of the Land Office by outside attorneys and inside law clerks is altogether too apparent. Whatever recourse yet lies open to the State must be sought in the United States Court. That the mineral applicant and his coadjutors have any other purpose than to divide their claims up into town lots has never for a moment been believed by the citizens of Tacoma, who have watched these proceedings with mixed feelings of indignation and astonishment.

GOLD PRODUCTION OF THE WITWATERSRAND.

The extraordinary growth of the gold mining industry in South Africa, and the consequent rush to invest money in a country which was hardly known five years ago, but which now takes rank second among the gold producers of the world, make a brief analysis of the reports available from the Witwatersrand District in the Transvaal, from which nine-tenths of the South African production is at present drawn, a matter of much interest. The material for this analysis is found in the reports issued each month by the Johannesberg Chamber of Mines, which give in detail the output of the district.

The rapid growth of mining is shown at a glance by a statement of the gold production for four years past, which was: 1891, 729,238 oz.; 1892, 1,210,868 oz.; 1893, 1,478,477 oz.; 1894, 2,035,970 oz. The output for last year was thus very nearly three times that of 1891. A comparison of the years 1893 and 1894 may enable us to draw some conclusions as to the district and its future.

An important point in the returns for last year is the gradual and apparently steady decrease in the average returns per ton obtained. The total amount of ore worked last year in the mills was 2,827,365 tons, and the average obtained per ton by milling work was 0·46 oz. (0·37 fine ounce = $7.65) per ton. This was a decrease of 3·4% from the average reported in 1893. If we take the complete returns, including all gold obtained from concentrates and tailings as well as from milling, we find the average return on the ore mined in 1894 was 0·72 ounce (0·576 fine ounce = $11.91) per ton, against 0·67 ounce (0·536 fine ounces = $11.08) per ton in 1893. That this increase was only apparent, however, is shown by the fact that the quantity of tailings worked over last year was 2,674,673 tons, while in 1893 it was only 1,217,792 tons; that is the output of 1894 included a considerable amount from accumulated tailings of previous years' workings. A fairer way of comparing the averages is to take each source of production separately, as we have done in the following table:

	1893.	1894.		Changes.	P.c.
Ore milled	2,203,704 tons	2,827,365 tons	I.	623,661 tons	28·3
Tailings reworked	1,217,792 "	2,674,673 "	I.	1,456,881 "	119·6
Yield per ton, ore	0·479 oz.	0·462 oz.	D.	0·017 oz.	3·4
" " " tailings	0·250 "	0·220 "	D.	0·030 "	13·6
Total yield:					
Milling ore	1,056,283 oz.	1,305,408 oz.	I.	249,025 oz.	23·6
Tailings	304,198 "	587,388 "	I.	282,890 "	92·9
Concentrates	67,737 "	81,579 "	I.	21,842 "	31·8
Other sources	54,859 "	58,595 "	I.	3,736 "	6·8
Total	1,478,477 oz.	2,035,970 oz.	I.	557,493 oz.	37·7
Fine ounces	1,182,782 "	1,628,776 "	I.	445,994 "	37·7
Value	$24,448,096	$33,666,900	I.	$9,218,804	37·7

In giving the fine ounces and the value throughout we have taken Witwatersrand gold as ·800 fine, this conclusion being derived from the statements of its value uniformly given. It is much to be regretted that for this--and indeed for every—district the returns are not made in fine ounces.

Several points are brought out more clearly by this table. Fully as large and perhaps a larger part of the gold was saved in milling last year; for while the proportion of mill gold was 64·1 per cent. of the total in 1894 and 71·5 per cent. in 1893, the difference is more than accounted for by the large increase in quantity of tailings. The amount obtained from concentrates, chiefly by chlorination, shows some increase in the pyritic contents of the

veins as the workings increase in depth, but not in any large proportion. Taking the ore and tailings together, we find that there was an increase of 60·8 per cent in the tonnage handled to obtain an increase of 37·7 per cent. in the gold output; but these proportions will hardly hold good in the present year, when the proportion of tailings worked to ore milled will probably be much less than it was last year.

The important data as to the cost of working on the Witwatersrand are lacking. The amount paid in dividends has been large, but there are many companies which have paid nothing to their shareholders. The cost of supplies and fuel is gradually decreasing, owing to the improvements in transportation and the development of the coal resources of the Transvaal; but these savings may be offset by the increasing demand for labor, and the difficulty of obtaining it. So far we have nothing on which any close estimate of the average cost of mining in the district can be based, and only the fact that many companies are paying dividends on returns of $10 or $12 per ton, seems to show that these low-grade ores can be handled at a profit. More detailed information as to costs would be of the greatest interest to the mining world.

As to the future production of the Witwatersrand no predictions can safely be made. The old accumulations of tailings are nearly exhausted so that the addition to the output from this source will be somewhat less hereafter. The confidence of the large companies in the future is shown by the fact that they are adding to their mill capacity and the 2,400 stamps now at work will be increased by nearly one-half within the next six months. While the ore shows a tendency to decrease slightly in value with depth, there are no indications of its exhaustion. Moreover, there is a considerable area, through which the great banket vein is believed to extend, which has been hardly touched as yet. On the other hand the general belief in the richness of the vein at great depths rests thus far on the indications of a few borings, and none of the "deep level" companies which are now sinking exploration shafts will be in a position to report results for a year to come.

It is fairly safe, however, to expect a large production from the Witwatersrand for at least several years to come; and when the mines of that district begin to show signs of inevitable exhaustion the new fields of Matabeleland and Mashonaland will probably be producers, so that South Africa will continue to be a very important factor in the gold supply of the world.

BOOKS RECEIVED.

In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review on another page of the Journal.

Bureau of the American Republics: Bulletin No. 58; Salvador. Washington, D. C.; Issued by the Bureau. Pages, 169; with map and illustrations.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
Letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

The Schafer-Heinemann Accumulators.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I beg to call your attention to an error in the chemical formula of "The Schafer-Heinemann Accumulator" article on page 148, second column, line 28, of your issue of February 16th. The formula in question reads:

$$Pb.O_2\ Mn.O + H + O_2 - Pb.O_2 + H\ Mn.O_4.$$

It should read:

$$2\,[Pb\,O_2, MnO_2] + H_2 + 2O_2 = 2PbO_2 + 2HMnO_4.$$

NEW YORK. T. U.

British vs. American Iron and Steel Trade.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Referring to your editorial on page 170 of the "Engineering and Mining Journal, I may say that I am very much interested in the matters referred to, as the information furnished by me has been very largely the basis of Mr. Head's papers and statements.

I wish to offer a correction of the statement which you make as to the freight rate from Birmingham to Mobile. The rate to New Orleans is, or probably would be, as you quote, $2, but to Mobile or Pensacola we can go for foreign shipment at $1 per ton, and are endeavoring to secure ballastings on cotton cargoes, and if we can do so we will certainly give some of the English consumers in the Manchester district the opportunity of comparing our iron with Cleveland pig. I thought you would be interested to know that we are to this extent nearer the point of exportation than your editorial remarks would imply. JAS. BOWRON.

NASHVILLE, TENN., Feb. 26, 1895.

[The freight rate given in the latest pig iron tariff issued by the Queen & Crescent Route is $2 from Birmingnam to both Mobile and New Orleans. A rate of $1 per ton for foreign shipment shows the willingness of railroads to promote this industry.—Editor "Engineering and Mining Journal."]

A Possible Explanation of Kernel Roasting.

EDITOR ENGINEERING AND MINING JOURNAL:

DEAR SIR: In the Engineering and Mining Journal of the 2d inst., Mr. Henry M. Howe, in his article, "A Possible Explanation of Kernel Roasting" (of copper bearing pyrites) states, "the essence of my explanation is that this concentration, this locomotion of the copper sulphide is due to surface tension, that the supposed plastic layer retreats toward the center, because the tension of its surface holds it to the solid core."

Mr. Howe and other writers on the subject have probably not noticed the fact, in connection with kernel roasting, that in such roasting the kernels become magnetic. I use the term magnetic in the sense of being acted upon by a magnet.

The copper-bearing pyrites, on being heated, become magnetic before any apparent oxidation takes place, and, as the oxidation of the outside of the piece increases and the size of the kernel consequently decreases, the kernel becomes more and more magnetic, while the outside becomes less and less magnetic until finally the outer casing is not at all magnetic.

I have examined a number of kernels from the roasting heaps of our ore here, containing from 10 to 50% copper, and find them, without exception, to be as stated. So it seems possible that magnetic attraction, or magnetic influence, aided by the necessary low temperature in the roasting heap, may possibly be a better explanation of the locomotion of the copper-sulphide, than that of surface tension. G. MC M. ROSS.

COPPEROPOLIS, Cal., Feb. 15, 1895.

The Lake of the Woods Gold District.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Your issue of the 16th inst. contains a letter written by Mr. Walter Douglass on the Lake of the Woods gold district. To one of his sentences I beg to call your attention, as it reflects most injuriously and unjustly upon the Crawford mill: "A few years ago here every mine-owner who could scrape together a few thousand dollars bought a Crawford mill. To-day one may buy half a dozen for a few cents a pound." This I consider an extravagant and erroneous statement. Only three mills have ever been sold in that region—one to the El Divir mine and two to the Bull Dog mine. The former proved so satisfactory that we have the owner's written testimonial to that effect. Unfortunately, his mill-house was burned several months after the erection of the mill. The latter two mills were erected by the mining company's own unskilled labor, nor was our representative, Mr. Strickland, permitted to make a continuous commercial run. The mills seem to have been employed chiefly in testing various samples of the mine's ore. These were not so rich as anticipated, and the mine was closed. Had the mill and not the mine been at fault, it is reasonable to suppose other machinery would have supplanted the Crawford mills, but to-day both mills and mine are idle. That the mine-owners, however, were pleased with the Crawford mill was evidenced by their subsequently negotiating for the purchase of several additional mills having improved wearing parts, to be used on another property.

NEW YORK, Feb. 26, 1895. W. O. ROSS.

Coal Consumption in the Desilverization of Lead.

EDITOR ENGINEERING AND MINING JOURNAL:

The letter of Mr. W. Maynard Hutchings in your last issue is a genuine surprise to me. It is very interesting and admirable and I am truly gratified at the high estimate he puts upon my "Metallurgy of Lead." But he has singularly misunderstood my figures or at least what they stand for. When I say, page 337, "the coal required for desilverization, including liquation, is about 54 lbs. for a ton of unsoftened base bullion," this does not include softening and refining. The reason that the liquating is included is because the fuel required for it is not generally kept separate from that used in the desilverization proper. On page 324 I have said, "the fuel consumed for the entire softening is about 155 lbs. of soft coal per ton of bullion charged"; on page 341, "the coal consumed in refining is about 120 lbs. per ton of unsoftened bullion"; on page 347, "the fuel consumed in softening, desilverizing, liquating, refining and moulding is about 330 lbs. of soft coal per ton of base bullion." These statements ought to have guarded your correspondent against the error into which he has fallen.

Mr. Hutchings takes issue with our American way of performing the whole softening process in one furnace, the oxidizing-smelting following at once upon the liquating. Here he is again under a misapprehension. He says that we soften the bullion rapidly at a high temperature. It is a mistake about the temperature, which is always low until after the dross has been removed, but the furnace being hot to begin with, the operation is of course more rapid than with a cold one.

As to the greater consumption of zinc, may it not be partly caused by the greater richness of our bullion (300-oz. bullion with 1 or 2 oz. of gold not being uncommon) as well as by the fact that fewer zincings are used, thus increasing the amount necessary. H. O. HOFMAN.

BOSTON, Feb. 26, 1895.

DIVIDENDS PAID BY MINING COMPANIES, FEBRUARY AND YEAR 1895.

NAME OF COMPANY.	Paid in February.	Paid in since Jan. 1.	NAME OF COMPANY.	Paid in February.	Paid in since Jan. 1.
Am. Dev. & Mg. Co., Mont.	.....	$24,340	Kennedy, Cal.	.....	$18,000
Alaska-Treadwell, Alaska	.....	75,000	Mayflower, Gravel, Cal.	$6,000	18,000
Bald Butte, Mont.	...	12,000	Mercur, Utah	.....	25,000
Belden, F. E., Mica, N.H.	$5,000	10,000	Mollie Gibson, Colo.	.....	50,000
Bangkok, C., Bell, Colo.	6,000	12,000	Montana, Ltd., Mont.	.....	82 500
Bullion B. & C., Utah	25,000	75,000	Montana Ore Pur. Co.	.....	40,000
Centennial-Eureka, Utah	30,000	60,000	Morning Star, Cal.	.....	9,600
Champion, Cal.	.....	3,400	Mt. Rose, Colo.	.....	5,000
Con. Cal & Va., Nev.	54,000	108,000	Napa Cons., Cal.	.....	10,000
Copper Queen Con., Ariz.	50,000	50,000	Nugget, Colo.	.....	5,000
Coptis, Nev.	1,000	1,000	Oceola Cons., Mich.	.....	50,000
De Lamar, Idaho	.....	100,000	Portland, Colo.	30,000	30,000
Forepaugh, Colo.	.....	16,000	Quincy, Mich.	200,000	200,000
Gold & Globe, Colo.	3,750	7 500	Smuggler, Colo	.....	50,000
Golden Fleece, Colo.	.....	12,000	Victor, Colo	20,000	40,000
Hecla Con., Mont.	.....	15,000	W. Y. O. D., Cal.	.....	3 000
Homestake, So. Dak.	31,250	62,500			
Hope of St. Louis, Mont.	.....	10,000	Total	$464,000	$1,328,840
Iron Mountain, Mont.	.....	10,000			
Jackson, Cal.	2,000	2,000			

Readers of the "Engineering and Mining Journal" will confer a favor on the publishers if they will notify the "Journal" of any errors or omissions in the above table.

THE SAMPLING AND MEASUREMENT OF ORE BODIES IN MINE EXAMINATIONS.

By Edmund B. Kirby.

The following interesting article is slightly condensed from a paper read before the Colorado Scientific Society. Through the courtesy of that body and the author we are enabled to first present it in print, antedating its publication by the society.

The examination of a mining property necessitates an inquiry into everything that bears upon its value as an investment. Among the principal facts to be determined are the net value of ore already discovered, the chances indicated for further discoveries, the best metallurgical treatment and the past record of the property. Estimates are required of operating expenses, costs of development, equipment, etc., together with the profit to be expected. The price and terms of payment, the working capital needed and the time required for its recovery, the question of title, the risks from litigation, flooding and other accidents also enter the problem.

It is the object of this paper to discuss only one part of the work thus outlined—the valuation of discovered ore by sampling and measurement. This has little or no importance in some cases; either because no ore has yet been found, or its quantity is small, or other matters are sufficient to decide the question of investment. In other mines the amount of discovered ore is one of the chief considerations, and requires an accurate estimate. This is a difficult and laborious undertaking, often calling for every resource of technical skill. But little has been published upon the subject in professional literature, and every engineer has selected or evolved his own methods, generally with little knowledge of, or reference to, those of others. It is therefore intended to describe the methods which the writer has found most effective, in the hope that others engaged in the same field may also contribute to this important subject.

It is desirable to first define the exact sense in which the following terms will be used in this article.

Ore shoots are those portions of an ore deposit where the ore bodies are so frequent or so grouped that partial boundaries of some definite shape and direction may be drawn around them, and such specially productive portions thus distinguished from the rest. The term is also applied to a single ore body, which has considerable extension in one direction.

An ore body is, in general, a solid and fairly continuous mass of ore, which may include low grade and waste as well as pay ore, but is individualized by form or character from adjoining parts of the deposit.

Pay ore includes those parts of the ore body which are both rich enough and large enough to stope with profit.

In order that the facts may be clearly presented to the mind, the discovered ore is separated into two classes—ore in sight and probable ore.

"Ore in sight" is that within blocked portions of the deposit, each of which is so clearly exposed (by sections on several sides) that the limits, continuity and value of its contents may be determined and relied upon with reasonable certainty. Such ore is thus a proven resource, ready for extraction, and is expressed in terms of net profit.

"Probable ore" is a more elastic term, and includes any blocked ore not certain enough to be "in sight," and all ore which is exposed for sampling, but whose limits and continuity have not been proved by blocking. It may also include any undiscovered ore which from the evidence is too strongly probable to be classed under "chances indicated." Probable ore may be estimated in several distinct divisions, and the relative degree of probability assigned to each.

In practice the ore shoots and bodies of a deposit, themselves irregular in form, are found penetrated by any conceivable arrangement of mine workings, from orderly shafts and levels to the "corkscrew rat-holes" of the prospector or lessee. Thus every mine presents its own special problems.

In sampling ore "in place" four general systems are in use:

I. A large number of small samples for assay, each of which is quickly and roughly taken, are cut from lines distributed at small intervals over the area of each plane section.

II. A limited number of large samples for assay, each carefully and laboriously taken, are cut from lines distributed at wider intervals.

III. "Mill Runs."—In this system each sample is either sent to a mill, where its actual yield is ascertained, or it is shipped to some sampling or smelting works, where an assayer's pulp is prepared from it by accurate sample reduction with machinery.

IV. Panning in a Miner's Gold Pan, or Horn.—This test is applied to a large number of very small samples, each of which has been roughly taken and pulverized for the purpose on a stone, or buck-board, or in a mortar.

The first system is adopted to save time and expense whenever the second or third is unnecessary. There are many samples to assay, but the work of taking each one is small. It gives correct results only when applied to soft ore bodies, where the sample may be cut out easily and uniformly by pick, gad or moil. The method is permissible only when the richest portions of the ore are not too much scattered in spots, streaks, or special layers, and are not too high in grade. In other cases it is applicable to very thin sheets of ore. It is frequently used for daily working samples in the operation of a mine, or in other cases where a quick, rough approximation is desired. Each sample may be small, requiring reduction to only half or one-fourth its bulk for the final package, while it is often sufficient to break so little from each point that it may be sent entire to the assay office. There may be a large error in any single sample, but this is balanced in averaging by the great number taken.

The second system is necessary for all hard ore (requiring blasting), and for bodies in which the variations of value are great, or where the richest portions are irregularly distributed. It is always expensive and laborious, but generally the most accurate method, and is therefore most frequently employed. The sample broken is always large enough, from 25 lbs. to 50 tons, to correctly represent the variations along the line of its cut, and is reduced to a small package for transportation to the assay office. Each sample is accurate, the error involved in the system being that due to the wide intervals between samples and the small number to be averaged.

The third system of "Mill Runs" is rarely adopted unless a mill happens to be close at hand and the ore body is of such size with values so variable or scattered that samples by the second system would be very large (10 to 50 tons), and the work of hand reduction therefore very great. Mill runs are more useful for metallurgical tests than to determine the value of ore in place. For the latter purpose their results are frequently deceptive, and they are therefore dangerous in unskilled hands. This is because each mill run is so tedious and expensive that few are made, and thus but a few scattered points of the ore deposit are tested. If each sample is composed of ore from various points it is practically impossible to have the right proportion from each one, and the result is also subject to the serious errors of mixed samples. Again, the mill is often metallurgically unsuited to the ore, and it is more difficult to guard against fraud. When it is necessary to use this system, extra money and time should be provided for, and the samples made numerous enough for safety.

The fourth system of panning is restricted to free gold ore, and while it is not intended to furnish exact figures of value, it is very useful as an auxiliary method to determine the relative distribution of gold and the limits of pay ore. In the regular operation of a mine it is often used to guide the work, and if checked frequently by assays or mill results, mine foremen sometimes become remarkably expert in judging the exact value from pan tests. This cannot be done with unfamiliar ores, but even then it is generally possible to distinguish roughly between ore above and below pay.

Each sample is cut along a line, making a trench, or groove of the same dimensions throughout, and so placed as to cross any principal lines of variation in the grade or character of the ore. The lines of sample cuts are impartially distributed over the area of the plane sections adopted, in positions as nearly equi-distant as possible. The boundary between pay ore and low grade, or waste, is provisionally fixed by judgment. If in doubt about a low grade streak, a separate sample is made of it.

In the first system the sample cuts are shallow, uniform goooves, say 3 in. to 6 in. deep, and generally within 2 ft. or 3 ft. in length.

In the second system the quantity broken is fixed partly by the length of the line, and partly by the distribution of values along it. The usual range is from 50 to 400 pounds. In order to secure reliable averages across a large and "spotted" ore body, the writer has found it necessary to break 25 and even 80 tons for single samples. These extreme quantities, however, were tested by mill runs. The trench, or groove, is blasted out and afterwards trimmed to uniform dimensions. Large samples exceeding, say, 350 or 500 lbs., may be received upon the bare floor of a level, but when the bulk is less is handled on canvas. This is protected from injury by covering with loose plank before blasting.

From Loose Material.—In mine examinations it is frequently necessary to take samples from loose ore, dumps, mill tailings, etc. To obtain a sample of ore which is being extracted, one or more shovelfuls are taken out of each bucket, or car, and thrown into a pile to make the sample. In the case of sacked ore, a few pounds are taken from the top of each sack, or, when greater accuracy is necessary, every second or fourth sack is emptied on the pile. A pile of ore on the dump may be roughly sampled by taking one or more shovelfuls from each one of many points, distributed at equi-distant intervals over its surface. The only safe method, however, is to drive several open trenches or tunnels through the mass, taking, say, every tenth shovelful for the sample. For a dump of mill tailings a boring tool is used, made of a 16-in. piece of 2-in. pipe. This is easily carried to the mine and attached to a handle of convenient length. The dump is pierced by bore-holes at equi-distant intervals, and the borings from each hole are reduced and assayed separately.

The reduction of a sample from its original bulk to that of the assayer's package does not differ in principle from the process followed at sampling and smelting works, but requires less accuracy. Moreover, instead of using machinery and routine methods, the reduction must be made on the spot by hand, upon samples varying greatly in grade and quantity, and under every disadvantage of underground conditions, from showers of water to the cramped quarters at the bottom of some narrow hole. Therefore no two samples are reduced in the same manner and fixed rules are impossible.

The process of reduction requires the continual repetition of two consecutive operations. First, crushing to a certain maximum size; second, the impartial selection of a fractional portion of the mass. The latter operation comprises the two consecutive acts of mixing and cutting, these being performed once or several times, until the definite fraction desired is obtained.

Whatever final limit of error is permitted for a given sample, it is a rule that at each repetition of this series of operations they must be performed with more care than before. In consequence of this a very large sample requiring many repetitions finally reaches a stage where so much care and accuracy are required that hand work is too laborious. At this point the sample, whatever its bulk, should be made up into the final package and sent to the assay office, where crushers, grinders, the buck-board, and fine sieves are available for the final operations. Thus the bulk of the final package is fixed by deciding whether it is better to incur the expense and delay of pushing reduction a step or two further at the mine, or on the other hand to bear the cost of transporting a greater weight to the assay office. In practice the packages generally range between 4 and 10 lbs., and frequently reach 25 and 50 lbs., especially when the assay office is near.

The ore is broken so that no lump shall exceed the maximum size decided upon. Very rich lumps are broken smaller in order to distribute their value. During the final stages of reduction a pair of sieves with ¾-in. and ½-in. meshes are useful to separate out those lumps which require breaking. The instinctive judgment derived from long experience in sample reduction is necessary to promptly decide the maximum size and the fraction to be selected at each series of operations. These must be so taken as to keep the work within the limit of error allowable, and at the same time have it move rapidly.

Reed's formula* is the result of an effort to find a rule which will express mathematically the effect of the aforesaid conditions for any case. It does this in a very satisfactory manner for the accurate work of sampling and smelting works where the limit of error is 1%, and it is of interest to compare the figures taken from practice with its theoretical results.

Taking an ore containing from $10 to $50 per ton, and assuming that the richest lumps of full size do not assay more than five times the above value, and assuming the first sample to be 800 lbs. to be reduced to a

* Columbia School of Mines Quarterly, 1885, Vol. VI., p. 351.

7 lb. sample by taking ¼ after each crushing, then the 800 lbs. is prepared for reduction by crushing to 4 in., the size adopted in practice, and by Reed's formula to 3 in., with a 5% limit of error, and to 3·8 in., allowing a 10% limit of error. The 450-lb. sample taken from this is reduced to 2 in. in practice, and 1·9 in. with 5% error limit by Reed's formula, and 2·4 in. with 10% error limit. The 112-lb. sample taken from this is reduced to 1 in. in practice, and by Reed's formula to 1·2 in. with 5% error limit, and 1·5 in. with 10% error limit. The 28-lb. sample secured from this is reduced to 1·5 in. in practice and as collected by Reed's formula to 1·75 in. with 5% error limit, and 1·9 in. with 10% error limit. From this is taken the 7-lb. sample.

The three following methods of mixing are used in mine work: I. Pouring from one pan into another. This imperfect method is used only in the final stages of reduction, and when it is to be followed by riffle cutting. II. Rolling in canvas. This is the best method known, and is used whenever the sample is small enough to handle, say under 200 lbs. III. Coning. The sample is shoveled into a conical pile, so as to secure a uniform radial distribution.

Three methods of cutting are used in the reduction of mine samples. I. Shovel Cutting—The pile is shoveled over, one shovelful out of a certain number being taken to make the sample. The ratio depends on the bulk and the accuracy required, but may be, say, one in ten for a bulk of over five tons, one in three for 1,000 to 2,000 lbs., and one in two for smaller quantities. The latter is the ratio used in most cases even for larger amounts. II. Quartering—The pile of ore, thoroughly mixed, symmetrical in shape and with the coarse and fine symmetrically distributed, is flattened and divided into quarters, two of which are taken. III. Riffle Cutting, or "Splitting," on a hand riffle—The size preferred for most underground work has several parallel troughs 1¼ in. wide, and the same distance apart, so that it may be used whenever the sample has been crushed small enough to pass this space. Riffle cutting is the most accurate and generally the most rapid method in use. The assayer is always instructed as to the crushing size and further reduction of the sample package to the final assay pulp. From his results the assay value of each sample is so calculated as to conform to the plan of cost estimate adopted.

In mines where the ore broken and hoisted must have its richer portions sorted out to make a marketable product, it is necessary to determine the percentages of total value and of tonnage which are thus available. Sorting tests are made upon the mine samples, using those coarsely broken portions which were rejected during the first operations of reduction. These are mixed proportionally to form a few group samples. All the resulting products from sorting are then weighed or measured to determine their relative weights, and each product reduced to the assay office package.

Ore bodies frequently contain occasional streaks or pockets of high grade silver minerals or metallic gold, and a sample here and there may chance to include one of these, thus giving an assay far above the general average. Since all the samples taken are at best few in proportion to the mass represented, the error introduced by averaging in such assays may be very great. It is therefore necessary after plotting the assay results to reject such values, and some arbitrary figure corresponding to a mean of the next adjoining samples is substituted for use in averaging. It is here necessary to call attention to the danger incurred in the practice of uniting a number of samples and assaying the mixture. It is practically impossible to mix in correct proportions, and this plan also fails to furnish the necessary information about the distribution of values and the limits of pay ore. The results are also liable to serious error from excessive samples as explained above.

(To be continued.)

SOLUBILITY OF BASIC SLAG.

By C. H. Ridsdale.

In a paper read before the Cleveland Institute of Engineers the author discusses certain statements published as Professor Wagner's, and current impressions relating to the "fertilizing activity" of various makes of basic slag as measured by the citrate solubility of the phosphoric acid, some of which, particularly the third, were in his opinion misleading.

1. That this solubility represented or was closely parallel to the availability for plant life under actual agricultural conditions.

2. That the more soluble slags were also generally higher in silica.

3. That slags having a higher "percentage solubility" were more valuable than those with a low percentage, though the former might contain only 10% or 12% total phosphoric acid, as against 17% or 18% in the latter.

An instance of the third proposition cited, was in a pamphlet, which was a translation of a paper by Professor Wagner, published presumably for farmers, in which were tables giving numerical values to slags of different makes, which as printed were altogether incorrect, a slag having 8·44% solution phosphoric acid, being valued at 100, whilst one having 14·48%, nearly twice as much was only valued at 81, simply because only this percentage of the total phosphoric acid was soluable. These values held good per unit, but this had not been stated, and in consequence of such statements, entirely false impressions had been created, which it was important to remove, as they might be most serious to makers and farmers.

He had carefully examined the six crystalline constituents of basic slag, three of them phosphoric and three non-phosphoric, some of which Mr. Stead, and himself had discovered and described for the first time to the Chemical Society and Iron and Steel Institute, early in 1887.

He had also examined a number of basic slags, including three of the Northeastern Steel Company's make (which gave very good results), and a number of other British makes, all of a degree of fineness as put on the market, as well as silicious cinders for comparison. Of these he had determined the "citrate solubility" by Professor Wagner's method, together with the effect of friction on the same, the composition and the carbonic acid water solubility, and had drawn up a number of tables and diagrams (which were shown by means of lantern slides kindly prepared by Mr. Stead) illustrating the results.

He showed that: The portion of the phosphoric acid not soluble in the first treatment by the "citrate" test as conducted, is not necessarily unavailable for plant life, even during the first year, as extended conditions such as:

1. More solvent. 2. Greater degree of fineness. 3. Longer time. 4. Friction such as may take place between the earth and the slag, &c., may render it all soluble.

That pure tetrabasic phosphate of lime, whether natural (as in the transparent plates) or artificial (as prepared synthetically by Mr. Stead) are completely soluble, and as readily so as the blue crystalline variety, if the citrate used is proportioned to the phosphoric acid present.

That increased quantities of poorer slags, containing the same quantity of soluble phosphoric acid as richer varieties, and which should, when treated with fixed quantities of solvent (as would under actual agricultural conditions be the case) yield an equal amount, do not, but yield much less.

He dissented strongly from the expression of results in terms of "percentage solubility," and drew many comparisons between this and the absolute solubility.

His earlier experiments showed the alleged close relation between the silica content and the "percentage solubility," to have almost as many exceptions to as examples of the rule, and that there was a point beyond which the higher the silica the less the solubility. He contended that only practical tests extending over years could show the real value of slags of different degrees of solubility, and that next to this would come carbonic acid water tests.

He therefore sought further for the principles governing this, and after determining what bodies the citrate solution dissolved preferentially as well as from a close study of the behavior of whole series of samples, and of other evidence adduced, felt there was good ground for the following conclusions:

The "percentage solubility" depends on:

1. The actual content of phosphoric acid, varying inversely to it.

2. The neutrality, or freedom from excess lime (and possibly certain other bases).

3. That silica does not per se increase this, but only:

a. When it combines with and thus neutralizes excess of lime, and possibly certain other bases.

b. When as a condition of the presence of a large quantity of silicate of lime (which silicate appears not to interfere with the solubility in the quantities in which it is generally present), there is only a low total percentage of phosphoric acid present.

4. That Silica decreases this when present in quantities greater than required in 3, or sufficiently large to bring about the formation of silicates of iron or manganese.

5. That excess of oxides of iron and manganese have a very small effect, almost negligible when compared with that of lime, the actual solubility being the resultant of the inter-action of each of these conditions as are present.

The absolute solubility or actual amount dissolved depends on:

1. The actual content of phosphoric acid, carrying directly with it, and in other respects following 2, 3, 4 and 5.

From these conclusions he showed that if any maker's slag has a poor solubility it is necessary in the first place to determine to which of these causes this is due, in order to decide what cure to adopt, or whether any is practicable.

ABSTRACTS OF OFFICIAL REPORTS.

Boston & Montana Consolidated Copper and Silver Mining Company, Montana.

The annual report of this company is given below in very full abstract from advance sheets sent us before the general publication. It covers the year ending December 31st, 1894.

The trustees submit the following report of the operations for the year: Gross receipts from copper, silver, and gold product from Great Falls were $3,630,527. The costs have been: Running expenses at Butte and Great Falls, $2,019,205; all other expenses of handling copper, such as freight, copper charges, commissions, expense account, taxes, assaying, and weighing were $623,877, making the total running expenses, $2,643,082, and leaving a balance of $987,445. Interest on bonded debt, premiums on bonds redeemed and other interest, were $122,781, and sinking fund payments, $150,000, a total of $272,781, leaving a net balance of $714,664. From this is to be taken dividends Nos. 15 and 16, $300,000, and mining property bought during year, $232,402, a total of $532,402. The remaining surplus for the year was $182 262, which, added to the balance of assets, December 31st, 1893, of $350,174, makes a balance of assets, December 31st, 1894, amounting to $532,436.

The amount of ore and copper in its various stages with which the Great Falls Plant is stocked is now somewhat larger than it was a year ago, being equal to about 7,000,000 lbs. of fine copper. This, after deducting the cost necessary to put it into merchantable shape and delivering it in New York, will show a net profit to the company of about $407,000.

The financial statement is as follows: Assets—Cash and accounts receivable at Boston, and copper, silver and gold on hand sold, but not paid for, $650,730; cash and accounts receivable at mine, $15,438; supplies on hand at mine, $9,721; cash and accounts receivable at Great Falls, $18,928; supplies on hand at Great Falls, $108,420; total assets, $803,237. The liabilities were: Accounts payable at Boston, $119,366; accounts payable at mine, $55,231; accounts payable at Great Falls, $96,204; total liabilities, $270,801. This leaves a balance of assets December 31st, 1894, at $532,436.

The capital stock is $3,750,000. The bonded debt at the close of the year was: First issue, $474,000; second, $289,000; third, $600,000; total, $1,363,000. The sinking funds available amounted to $111,972. From these funds 93 bonds were cancelled during the year at a total cost of $102,587. The total amount paid in dividends on the stock has been $2,375,000, of which $300,000 were paid in 1894.

The statement of receipts and expenses of all kinds, 1887 to January 1st, 1895, is as follows: Receipts—From capital stock, 150,000 shares, $25 a share, full paid, $3,750,000; first mortgage, 7% bonds, first issue, $1,000,000; first mortgage 7% bonds, second issue, $500,000; general mortgage 7% bonds, third issue, $600,000; copper, silver, and gold sales, $21,766,472; total receipts, $27,616,472. The expenditures were: Running expenses at mine and Great Falls, expenses of handling copper, discounts on bonds, commissions on new stock underwritten, interest on bonded debt and other interest, premiums on bonds redeemed, and sinking fund payments, $17,763,932; construction expenses at mine, $661,489; construction ex-

penses at Great Falls, $2,038,970; real estate, $4,228,362; land at Great Falls, $16,283; dividends Nos. 1 to 16 inclusive, $2,375,000; total expenditures, $27,084,036. The balance of receipts December 31st, 1894, was $332,436.

The report of Mining Superintendent Thomas Couch gives the following statement of development work and of ore shipped to Great Falls for the year:

Mines.	Winzes Feet.	Drifting Feet.	Stoping Fathoms.	Ore Shipped. Tons.
Mountain View	1,002	3,440	2,383	69,155
Pennsylvania	334	1,184	1,657	32,312
East and West Colusa	189	2,276	4,715	87,505
Total	1,525	6,930	8,755	188,972

In the Mountain View Mine during the year the south vein was cut on the 1,100 ft. level, and was found to have greatly improved both in strength and value in the last 100 ft. in depth. In this level a drift has been run along the vein over 300 ft. in ore of good quality and standing more nearly vertical than in the upper levels, the thickness being nearly 8 ft. On the 1,100 level a crosscut is being driven to intersect the north vein. It is now in 150 ft. and will be driven about 280 ft. more. During the year the 5th, 6th, 7th, 8th, 9th and 10th levels on the north vein have been extended eastward, the 7th and 9th have been connected with the 3d and 5th levels of the West Colusa, showing a continuous vein through the entire distance, nearly all of which is good workable ore.

In the East and West Colusa mines work has been confined to pushing the levels westward, which has added considerably to the available reserves of ore. The vein is generally large, and there are several expansions at some points, as much as 50 ft. In the Pennsylvania mine a vein was cut on the 600-ft. level and a drift 90 ft. long run eastward along its course. The ore so far in this level is of low grade, but a winze sunk on the 500-ft. level in advance of the drift carries the good ore for its entire depth in a cross-cut north of the shaft. On the 600-ft. level a vein was cut which seems to be an over-shoot from the main vein, but further explorations are to be made.

In the Johnstown mine, which is south of the Mountain View and between that and the Pennsylvania, the vein has been excavated by crosscuts run out south from the seventh, eighth and ninth levels of the Mountain View, and considerable exploration work has been done. In one opening a vein of good ore varying from 4 to 6 ft. in thickness has been disclosed.

Mr. Couch makes from careful survey and measurements of the ore blocked out an estimate of the ore reserves, which is as follows: Mountain View, 420,455 tons; East and West Colusa, 400,000 tons; Pennsylvania, 40,000 tons; Johnstown, 25,000 tons; total, 885,455 tons. In making these estimates no figuring has been done beyond the present faces of the drifts; had this been done, as it could be with safety, the estimate would run over 1,000,000 tons.

Nothing has been done toward the exploration of the eastward properties, and in view of the large reserves, it is not absolutely necessary to do anything at present.

The Moo-e and Auraria silver mines have been leased for part of the year on a royalty of 20% net, which yielded in all $4,675. The good ore in the west end of the Auraria has been nearly all stoped out, and that remaining is low grade. There is but little ore in these mines that can be profitably taken out without expensive sunk and developing work.

No new machinery or pumps have been added to the plant during the year, but those in place are in good condition. The output of ore could be doubled or trebled at very short notice. The electric light plant is now completed and giving good satisfaction.

The report of Mr. Frank Klepetko, as superintendent of the smelting and refining plant, says that at the Great Falls works during the year a fourth dynamo of 165 K. W. for electrolytic work has been added; also two electric generators for transmission of power. Two motors have been installed at the smelter, while two run the blast furnace blowers, and the other two operate the plant of the converters. In September the tail-race was cleaned out, and consequently an increase of power was secured, the addition giving the electrolytic plant an increase in product of 200,000 lbs. monthly. Some improvements have been made in the concentrating machinery. In the blast furnace department two furnaces have been added, giving one furnace for smelting Butte & Boston matte before sending it to the converters, and three furnaces for smelting the first-class ore, concentrates and slag.

No. 8 reverberatory furnace was finished during the year. There are now 25 gas-producers in use, sufficient to run five furnaces, which will keep up the normal product. In the refinery a fourth furnace has been put up to be used in refining electrolytic copper. The capacity of the electrolytic refinery has been increased to 1,800,000 lbs monthly. Some valuable additions have been made to the machinery shop also. In conclusion, Mr. Klepetko says: "The general working of the plant has been very satisfactory. When pushed it has a capacity of at least 50% more than the normal requirements, and with comparatively small expenditure in the smelter, this could be increased to practically double the output. We anticipate considerable reduction in the cost of blast furnace smelting, principally on account of reduction in the price of coke. Recent developments in the Belt coal fields indicate that good coke can be made from this coal. This would give us a very cheap blast furnace fuel. It may be necessary for you to appropriate some money for acquiring coal lands in this district and for erecting a coal-washing plant and coke ovens. The sum that may be required for this purpose may be considerable, but as we are consuming about $200,000 worth of coke yearly, and we anticipate at least a reduction of 50% in the cost of local over Eastern coke, we could probably save most, if not all, of the outlay in a year's time. With this lowering in cost of blast-furnace smelting in view, we are preparing to make much larger quantity of concentrates suitable for blast-furnace smelting."

THE PRODUCTION OF PRECIOUS METALS SINCE 1492.

The table below, with the accompanying comments, has been prepared by M. Paul Leroy-Beulieu for his new Treatise on Political Economy, and is published in advance in "l'Economiste Francaise." The figures for the different periods up to 1883 have been compiled from various sources, especial attention having been given to the researches of Soetbeer; those from 1884 are derived chiefly from the reports of the United States Mint. In giving the values of the metals they are taken throughout at 3,444·44 fr. per kilogram for gold and 222·20 fr. for silver; that is $20.57 per fine oz. for gold, and $1.33 per fine oz. for silver. These are coinage values of the Latin Monetary Union, with the ratio of 1 to 15½ between gold and silver.

PERIOD.	Gold. Quantity, kilos.	Gold. Value 1,000 francs. (000's omit'd)	Silver. Quantity, kilos.	Silver. Value, 1,000 francs. (000's omit'd)	Total. Value, 1,000 francs. (000's omit'd)
FIRST PERIOD OF THE PREDOMINANCE OF GOLD.					
1493-1544	334,240	1,151,269	3,480,800	773,503	1,924,772
FIRST AGE OF SILVER.					
1545-1560	136,160	468,995	4,985,690	1,107,900	1,576,895
1561-1600	284,400	979,599	14,368,000	3,192,857	4,172,456
1601-1700	912,300	3,142,363	37,234,000	8,271,139	11,416,502
1701-1800	1,900,100	6,544,780	57,034,900	12,674,296	19,219,076
1801-1840	637,250	2,195,073	24,919,350	5,537,567	7,732,610
Total, 1545-1840	3,870,240	13,330,810	138,541,800	30,786,759	44,117,569
PERIOD OF TRANSITION.					
1841-1850	547,590	1,886,141	7,804,150	1,734,238	3,620,379
SECOND PERIOD OF THE PREDOMINANCE OF GOLD.					
1851-1855	987,575	3,401,643	4,430,575	981,562	4,386,205
1856-1860	1,030,290	3,548,772	4,524,950	1,005,534	4,554,306
1861-1865	925,615	3,188,225	4,505,750	1,223,488	4,411,713
1866-1870	959,500	3,304,940	6,695,425	1,487,857	4,792,797
Total, 1851-1870	3,902,980	13,443,580	21,156,700	4,701,441	18,145,021
PERIOD OF ENORMOUS INCREASE IN THE PRODUCTION OF SILVER.					
1871-1875	853,375	2,939,365	9,847,125	2,188,228	5,127,593
1876-1880	834,000	2,975,986	12,251,260	2,722,475	5,698,471
1881-1883	448,740	1,545,658	8,247,224	1,834,921	3,380,579
Total, 1871-1883	2,166,115	7,461,019	30,355,609	6,745,624	14,206,643
THE NEW AGE OF GOLD.					
1884		526,900		564,000	1,090,900
1885		561,700		633,600	1,195,300
1886		549,200		644,900	1,194,100
1887		547,750		664,600	1,212,350
1888		570,500		752,400	1,322,900
1889		659,800		866,900	1,526,700
1890		577,100		921,000	1,498,100
1891		624,400		999,000	1,623,400
1892		677,800		1,051,000	1,728,800
1893		781,600(?)		1,000,000(?)	1,789,600
Total, 1884-1893	1,763,745	6,074,700	36,441,495	8,097,400	14,172,100
TOTAL PRODUCTION FOR 400 YEARS.					
1493-1893	12,584,920	43,347,519	237,789,564	52,838,963	96,183,484

Assuming the figures in this table to be approximately correct—and it will be readily understood that it is impossible to make them exactly so—we see that in the four centuries from 1493 to 1893, there was brought into our Western civilization a total of $19,200,000,000, coinage value of which $8,600,000,000 was in gold and $10,600,000,000 in silver. Adding to this about $17,000,000 in the precious metals, which is believed to have been in existence in Europe at the time of the discovery of America, we have a total of $19,217,000,000 in value. A question which immediately affects us is, what proportion of this sum has passed into the condition of coined money? To answer this fully we should know several points: first, what has been the quantity which has disappeared through loss and wear; second, in what proportion the stock of the precious metals of the western nations has been increased or diminished by their trade relations with people of a different civilization; third, what proportion of the precious metals has been absorbed in the arts.

Unfortunately, we cannot answer these questions with precision. On the first point the facts are absolutely lacking; on the second, the figures of the movement of the precious metals between Europe and the East and other countries are incomplete, especially during the early periods. Thirdly, the laws relating to taxation and the stamping of plate, etc., which exist in some European countries, give us some indications, but these laws do not exist in all countries; and, moreover, we have to take into account fraud and the natural tendency to escape taxation wherever possible.

The figures of the coinage of money, which for nearly three centuries past have been preserved in most civilized countries, give us some exact data to go upon: they show the quantity of money which has been coined, but by no means that which remains in circulation, since, even if it were possible to take account of re-coinage, and thus secure the net result of the mint operations, it would be impossible to know how much has disappeared by accidents of all kinds, such as fire, shipwreck, etc., by the hiding of treasure, and by the melting of coin, which, as we know, is an operation frequently performed by jewelers, bankers, etc., because circumstances often arise under which ingots of the precious metals are more convenient than coin.

The Director of the Mint of the United States estimated in 1893 that the quantity of gold and silver existing in the world in the form of coin somewhat exceeded $7,800,000,000, of which about one-half was gold and one-half silver. This estimate was necessarily tentative in its character, and would doubtless be subject to a considerable revision could we obtain the exact figures. Accepting it, however, as approximately correct, it would appear that of the gold and silver which the world has had at its disposal since 1493, only 41% remains in the form of money. What quantity is in existence in the forms of jewelry, plate and other objects of art and decoration, no one can say. Perhaps we might add under this head, say, $8,000,000,000; probably this would be too high and $7,000,000,000 would be nearer the truth, since a considerable part of the gold and silver absorbed by the arts disappears from time to time, for instance, that which is used in gilding and in silver plate, not to mention the gold used in dentistry which forms an appreciable quantity.

If we assume, then, that about $8,000,000,000 exists in form of money or coin, about $7,000,000,000 in the form of articles of jewelry and decoration, we would have somewhat over $4,000,000,000 which has disappeared through wear and through loss during the four centuries, although this amount is purely conjectural. It is possible that the amount absorbed in the traffic with the East is very considerable, since we have long known that the Eastern countries are great consumers of silver.

ORE-WASHING AT MONTEPONI, SARDINIA.

A simple ore-washing plant, designed by Sig. Ferrari, engineer of the Monteponi Company ,and used at the zinc mines at that place, is described in a recent issue of "Engineering." This installation is shown in the accompanying illustration :

From Fig. 1 it will be seen that one of the most important parts of the installation consists of an endless rubber band 28 in. wide, which is stretched over drums 13 ft. apart and moving at a speed of 20 ft. per minute over the two drums, one of which is driven by friction gearing. The band is supported by five rollers placed at short distances apart. The drums, as well as the rollers, are slightly inclined toward the front, so as to slope the band downward at the delivery edge. The crushed ore, plentifully mixed with water, is fed through a pipe near the upper edge of the band and placed over the driving roller, so that the band for a short distance is covered with the ore-charged water, which is carried on by the traveling belt, at the same time gravitating towards the delivery edge, over which the heaviest particles of ore fall into the receiver beneath, and is washed continuously by a series of water jets playing on the band. This very simple installation has been continuously used in Monteponi for more than two years, chiefly for separating calamine, cerusite, and sulphuret of lead from fine sand. Each jet discharges about 15 galls. of water per minute, and separates about 10 galls. of mixture, and 3 tons of ore can be separated per day of 12 hours. The machine being wholly automatic but little attendance is required. The arrangement demonstrates that a violent shaking movement is not necessary for separation, for the slower the travel of the sand, and the gentler the jets of water, the better the separation becomes. Experiment has shown that a shaking motion does not improve the work of the apparatus, while it introduces needless complications and increases the cost of working.

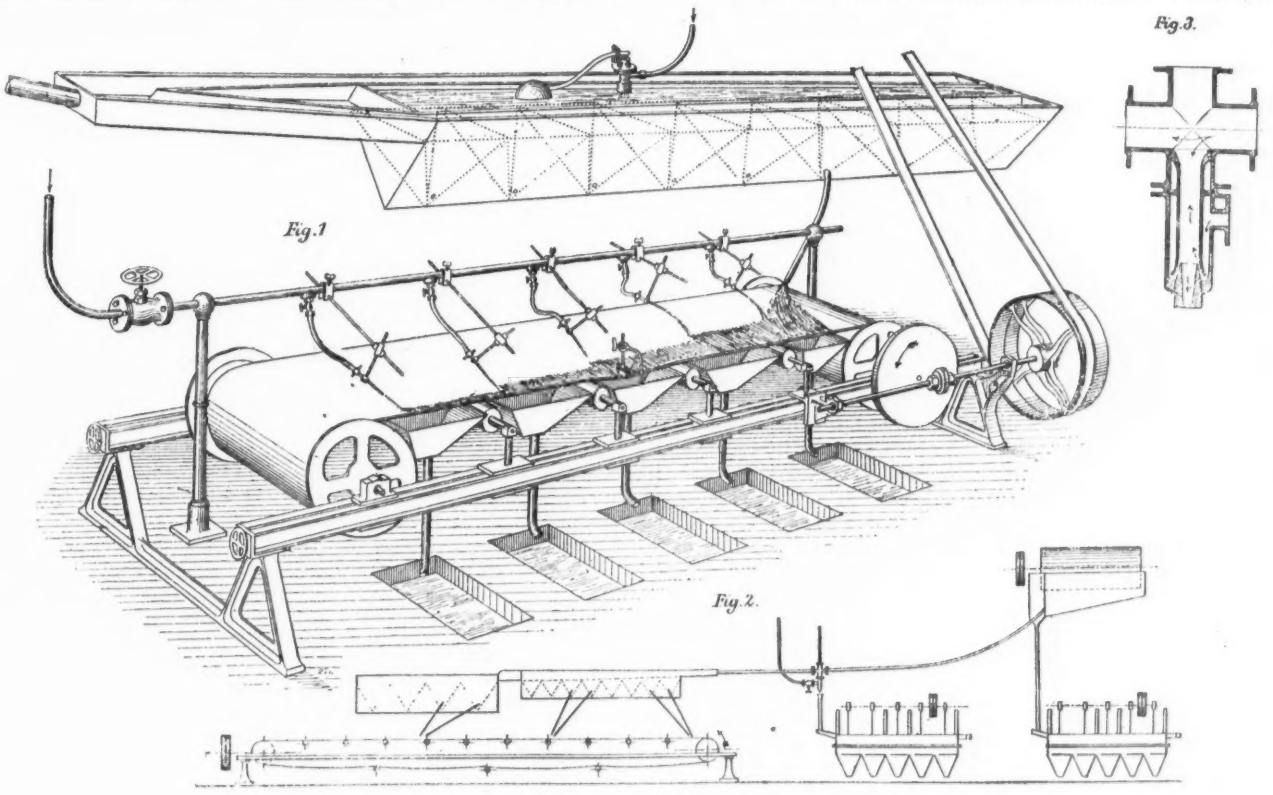
The length of the band may be increased almost indefinitely, when it is desired to use the overflow from other washing tables. The diagram, Fig. 2, indicates such an arrangement in operation; on the right hand side is a sorting screen perforated with holes of from 0·04 in. to 0·06 in.; the mixture delivered by this screen flows with a plentiful water supply through a pipe 4 in. in diameter to the long tank over the separator, to which it is delivered as above described.

In the delivery main a sand separator is introduced which removes the heaviest and largest grains and sends them to the jigging machine ; this separator is essential to successful working. The large installation, as shown in Fig. 2, can separate 20 tons of ore and sand in 11 hours.

The apparatus allows a great latitude in regard to the quantity of water employed, care being taken, of course, that enough is used to maintain a free discharge. For a 4-in. main it is necessary that from 40 to 50 gallons should flow per minute; the main leaves the hopper in which the screen works, with a fall of 30°. The sand separator which is introduced in the main is but little known, although it has been used for over 15 years at Montponi. Fig. 3 shows its construction, and its operation is as follows: The mixture, passing through the pipe, enters the horizontal part of the junction at high pressure, and, meeting a vertical opening, the heaviest particles naturally tend to fall, but the tube is encased in a larger one, in the side of which there is a valve admitting water also under pressure; this descends and then rises into the inner tube to a certain height, as indicated by the arrows, checking the sand from escaping, but permitting the heaviest particles to fall and flow to the jiggers.

In this apparatus the density of the grains of ore is far more important than their weight; for example, in the combination shown in Fig. 2 of a set of jiggers and the band separator, two-thirds of the separated ore goes to the jiggers, and only one-third to the bands; this division is wholly effected by the sand separator.

In an installation containing four band separators and four jiggers, the first delivers from one-half to two thirds of the lead ore, although the average material passed through each machine is equal. The fourth apparatus produces scarcely any lead ores, and in the third the grains are extremely small, while the rock particles average 0·04 in. in size; this great difference in size greatly facilitates the work of the jigger. While the densest grains have a downward tendency, the accelerated speed of the mixture in the sand separator carries with it all specifically lighter grains, and the denser ones fall. This is proved by the fact that the separators only work properly when they are far enough apart: that is to say, the mixture requires a certain length of pipe and of time for the grains to settle again and prepare for another separation.



ORE-WASHING PLANT AT MONTEPONI.

THE AUSTRALASIAN GOLD YIELD OF 1894.

Written for the Engineering and Mining Journal by John Plummer.

The general revival of gold mining enterprise in Australasia generally, accelerated by the remarkable discoveries in Western Australia, is shown by the increased output in 1894, which is the largest annual yield since 1874, a period of 20 years. The whole of the official returns have not been published, but the following estimate has been made on reliable data :

ESTIMATED AUSTRALASIAN GOLD YIELD, 1894

Colony.	Oz.
Victoria	939,496
Queensland	624,000
New South Wales	230,000
New Zealand	224,000
Western Australia	223,298
Tasmania	48,803
South Australia	35,844
Total	2,325,441

From 1874 the annual output of gold in the seven Australian colonies steadily declined until 1886, when it reached its lowest point, but since the latter year it has rapidly increased, a result to which the gold discoveries in Queensland and Western Australia have largely contributed. In 1892 the total annual yield was 1,807,213 oz.; the quantity obtained in 1894 representing an increase of 518,228 oz. in two years.

The richest gold mine in Australasia is that at Mount Morgan, in Queensland, from which, during the eight years ending May, 1894, were obtained 1,207,211 oz , valued at £4,963,498. The working expenses absorbed £1,400,080, leaving £3,560,000 to be divided among the shareholders, and £3,418 to be placed to current account.

In New South Wales, the newly discovered Wyalong field, situated between Sydney and the Victorian border, although furnishing no sensational yields, has been found to contain the elements of permanency, and has attracted a large-settled population. Considerable quantities of gold have been obtained by fossickers, members of the unemployed classes sent by the Colonial Government into the auriferous districts in preference to allowing them to remain idling in the metropolis. Promising gold discoveries have been made in various parts of the colony, and it is anticipated that the yield for 1895 will be considerably in excess of that of 1894. A much-needed apparatus is that for gold-saving purposes, large quantities of fine gold being annually lost during the process of washing. Many colonial inventions have been placed on the market, but, so far, none have come into general use.

In Victoria, the premier gold-producing colony, several of the riches discoveries during the last two or three years have been made in aban

doned auriferous country, erroneously supposed to have been worked out.

The progress of the Victorian gold-mining industry during the last 10 years is shown below:

VICTORIAN GOLD PRODUCTION, 1885-1894.

1885	783,671 oz	1890	584,770 oz.
1886	640,872 "	1891	621,986 "
1887	511,417 "	1892	663,374 "
1888	636 200 "	1893	707,367 "
1889	615,055 "	1894	713,085 "

In South Australia little progress has been made in gold mining generally, but attempts are being made to discover auriferous country in the northern mountainous districts. Although, so far, indications of the presence of gold have been obtained, there are no proofs of its non-existence in the unexplored country.

Tasmania has contributed its share to the increased output, a result of the discovery of new gold mines in that colony.

Of the marvelous finds in Western Australia, little can be said that has not already been made public, but there are reasons for believing that the auriferous region is of far greater extent than generally supposed, covering an area of several thousand square miles, and that rich finds will continue to be made as the country becomes more fully explored. All the mines opened up to the present have proved, more or less, of a permanent character, the reefs continuing as rich at a depth of several feet as at the surface. Within the next few months crushing operations will be commenced on an extensive scale at Coolgardie and elsewhere, with the result that the output for 1895 will place the colony second only to Victoria in the amounts and value of its gold production.

The total value of the gold raised in Australasia from its first discovery in 1851 to the end of 1894, has been estimated at between £360,000,000 and £370,000,000.

NAVY TESTS OF BIRMINGHAM COAL.

The cruiser Montgomery, which was ordered to Mobile, Ala., sometime ago to make tests of Southern coal, as noted in these columns, has thus far tried Sloss, Pratt, Cahaba and Milldale coals from the Birmingham district. A report upon the use of these has been forwarded to the Navy Department, and from it the following data is taken:

The first trial was of 75 tons of coal furnished by the Sloss Iron and Steel Company. Three tests were made, using 25 tons at each test. That made at the highest speed, 135 revolutions, during a trial of 10·65 hours, showed a fuel consumption per hour of 5,258 lbs., with 11·16% refuse, and a consumption per horse-power per hour of 2·42 lbs.; miles made per ton of coal, 6·452 at a speed of 15·15 knots. It was found necessary to sweep the tubes every 36 hours.

The test at the lowest speed, 100 revolutions, lasted 19 hours, with a fuel consumption per hour of 2,947 lbs. and 11·16% refuse. The fuel burned per horse power per hour was 2,356 lbs., and the number of miles per ton of coal, 8,604. The remarks on the use of this coal state that it is easily stowed, requires considerable working to make it burn well, and makes a large quantity of clinker. The fires required cleaning every third watch, and the tubes had to be swept every 36 hours. A large quantity of smoke of a grayish-black color is formed.

The second trial was made from a similar quantity of coal, supplied by the Pratt division of the Tennessee Coal, Iron and Railroad Company. The test at the highest speed, 135 revolutions, last 10·75 hours, with a fuel consumption per hour of 4,887 lbs. and 9·46% refuse. The fuel burned per H. P. per hour was 2·5 lbs., and the miles made per ton of coal 7·216. The tubes were swept every 36 hours. On the low speed trial, 100 revolutions, lasting 19·8 hours, the fuel consumed per hour was 2·828 lbs., with 9·46 lbs. refuse. The fuel burned per H. P. per hour was 2·83 lbs., and the miles made per ton of coal, 9·436. In the remarks on the use of this coal it is stated that after the first four or five hours it was not possible to keep the speed up to 135 revolutions as the fires were dirty. It required a moderate amount of working to make the coal burn well, and the clinker, while not excessive, appeared to stick firmly to the grate bars. A large quantity of smoke was formed of a grayish, black color.

The third trial was of 75 tons of Cahaba coal, supplied by the Tennessee Coal, Iron and Railroad Company. At the highest speed trial, lasting 9·5 hours, the fuel consumed per hour was 5,894 lbs., with 7% refuse. The fuel burned per H. P. per hour was 2·45 lbs., and the miles made per ton of coal, 5·485. Is was necessary to sweep the tubes every 48 hours. At the lowest speed trial, 100 revolutions, lasting 18·8 hours, the fuel consumed per hour was 2,978 lbs., with 7% refuse. The fuel burned per H. P. per hour was 3,017 lbs., and miles made per ton of coal, 8·988. In the remarks on the use of this coal, it is stated that the coal burned freely with but little working. The percentage of refuse is small and only a moderate amount of clinker, but this adheres to the grate bars and is removed with difficulty. A moderate amount of grayish smoke is formed.

The fourth trial was made of Milldale coal. At the highest speed, 135 revolutions, the trial lasting 7·55 hours, the fuel consumed per hour was 5,895 lbs., with 8·94% refuse. The fuel burned per horse power per hour was 2·607 lbs., and 5·934 miles were made per ton of coal. The smoke was grayish, and it was necessary to sweep the tubes every 36 hours. At the lowest speed trial, lasting 16·5 hours, the fuel consumed per hour was 3,062 lbs., with 8·94% refuse. The fuel burned per horse power per hour was 3,302 lbs., and 8 644 miles were made per ton of coal per hour. The smoke was grayish, and it was necessary to sweep the tubes every 60 hours. In the remarks made it is stated that the coal is easily handled, cokes readily when thrown on the fire, and burns freely with a moderate amount of working. Comparatively little clinker was found, and was not difficult to remove.

Tests of some other samples of coal were also made, which are reported to have proved unsatisfactory. The Montgomery is still at Mobile, making further tests of other coals which had been sent.

Units of Electrical Measurement.—During the Electrical Congress held at the Chicago Exposition a committee was appointed to consider the establishment of a system of units of electrical measurement, and the work, in the main, was left with the German physicist, Helmholtz. His death delayed the conclusion of the work. Now the matter is in the hands of Prof. O. C. Marsh, of Yale, and he will forward his report to Washington.

FRENCH IMPORTS & EXPORTS OF IRON, 1894

The imports and exports of iron ore and iron manufacture in France during 1894, show comparatively little change from those of 1893. An increase is observed in the imports of coke and a slight decrease in exports, while in iron ore there was a trifling increase in imports and a material decrease in exports. The following table shows the imports and exports in 1894, and, for comparison, those of 1893:

	Imports		Exports	
	1894. Tons.	1893. Tons.	1894. Tons.	1893. Tons.
Coke	1,529,982	1,443,819	57,064	58,606
Iron ore	1,638,439	1,630,441	247,627	301 731
Pig-iron—Foundry and forge	54,599	82,351	117,803	101,485
Ferro-manganese, ferro-silicon, etc	4,466	3,598	9	59
Ferro-aluminum	.....	.....	31	5
Totals	59,065	85,949	117,842	104,549
Finished Iron—Puddled bars, etc.	249	765	325	225
Charcoal bars	10,600	9,241	273	239
Coke bars	1,429	1,284	12,333	11,782
Rails	20	13	3,214	1,569
Angles and tees	899	460	1,141	1,085
Axles and tires	6	945	421	262
Forgings	1,146	1,895	.....	.....
Hoop iron, etc	170	325	1,295	2,029
Sheets, etc.—Sheets, rolled or hammered	690	1,006	2,302	2,444
Plates of more than 1/16 millimetre in thickness	1,036	404		
Plates having a thickness of 5/16 millimetre or less	1,240	706		
Tinplates	3,698	3,097	338	452
Wire	683	1,203	1,277	1,118
Old iron, etc	.....	.....	1,324	2,033
Totals	21,857	21,344	24,243	23,238
Steel—Rails	332	219	13,322	9,947
Ingots, billets, etc	2,360	853	1,542	1,111
For tools, etc	1,146	1,080	65	22
Axles, tires, etc	1,350	2,614	240	315
Plates and sheets	902	767	273	127
White cold rolled	221	176	75	58
Wire for instruments, etc	298	265	13	20
Totals	6,609	5,974	15.530	10,670
Totals of pig-iron, finished iron and steel	87,531	113,267	157,616	138,457

According to the "Comite des Forges de France" the consumption of rails in France during 1894 declined to 110,609 tons, as against 129,338 tons in the previous year. This is less than for any year since 1890, when the consumption amounted to but 66,844 tons. The two years preceding the last named had also been noted for small rail consumption, this having steadily declined from 249,416 tons in 1885 to the figure above given in 1890. In 1891 there was an increase, and in 1892 a still greater one, the consumption amounting to 163,840 tons. Since then, as already stated, there has been a marked decline.

ABSTRACTS OF OFFICIAL REPORTS.

Kearsarge Mining Company, Michigan.

The following is a report of the operations for the year ending December 31st, 1894: The receipts from the sales of 1,998,710 lbs. of refined copper, silver sales and interest receipts were $194.645. The total costs have been $176,448; total net income for year, $18.197. The balance of assets December 31st, 1893, was $155,021; the balance of assets December 31st, 1894, was $173,218, showing an increase of $18,197, as above. The financial statement shows the assets at the close of the year as follows: Cash in bank and accounts receivable at Boston and copper on hand, since sold, $165,791; cash and accounts receivable at mine, $1,471; supplies on hand at mine, $6,997; Hancock & Calumet Railroad stock, $25,000; total assets, $199,259. The liabilities were: Drafts and accounts payable, $26,041, leaving the balance of assets, December 31st, 1894, $173,218, as above.

The summary of work done in 1894 is as follows: Rock stamped, 64,287 tons; product of mineral, 2,376,025 lbs.; product of refined copper, 1,998,710 lbs.; yield of refined copper per ton of stamp rock, 31·09 lbs.; yield of refined copper per cubic fathom of ground broken, 434 lbs.; yield of mineral per cubic fathom of ground broken, 516 lbs. The proportion of mineral in stamp rock was 1·85%; the proportion of refined copper in stamp rock, 1·55%. The cost per ton of rock hoisted was $1.72, and cost per ton of rock stamped, $2.22. Refined copper cost per pound at mine, 7·13c.; the cost of smelting, freight and all other expenses of handling copper was 1·70c., making the total cost per pound of refined copper for the year, 8·83c. per pound.

The report of superintendent W. E. Parnall shows that during the year 4,608 fathoms of ground were broken, from which 82,936 tons of rock were hoisted to surface. The amount of opening work for the year is as follows: Winzes, 185·7 ft.; shafts, 191·5 ft.; levels, 2,341·5 ft.; total, 2,718·7 ft. The report says: "With the exception of the drifting done on the eighth and ninth levels, which was north of No. 2 shaft, the drifting as a whole has shown lean lode. Several small patches of fairly good lode have now and then been met with that may subsequently lead to better than the drifts showed. This has been the oft-repeated history of the past. From the fifth to the fifteenth level drifts were extended north of No. 2 shaft from 100 to as much as 300 ft., in the hope that something might be found that would link with the good ground extending north of the shaft in the upper levels. As nothing was found of value, and the twelfth level, extending south, gave promise of good ground, attention was at once directed to the development of the ground south of No. 2 shaft from the eleventh level down to maintain the output. Much of the ground opened from the eleventh to the fifteenth level, south of No. 2 shaft, has been good, especially so at the southern limit, where there seems to be a chute of copper ground with more than ordinary regularity. This southern ground has given most of the copper the past year. As No. 2 is the only equipped shaft, however, and the line of copper ground to the south by reason of its dip is constantly increasing the distance to reach it, the question of shorten-

ing the distance by completing No. 1 shaft, or something still further south, will claim attention in the future; not necessarily, however, until the 16th and 17th level, which is now being extended further south, further prove the continuation in depth and value of this south ground. Stoping is still being prosecuted above the eleventh level close to the south line, and should this ground hold good much longer, the extension of the 9th level south will be a necessity. During the year it was thought best to further extend some of the levels north of No. 2 shaft. The ninth was first started, and soon run into a good stoping ground. The 8th was next taken up, and, from appearances to date, has just struck the same run of copper ground. The 10th level is being pushed with the same object in view, and should reach the line of the copper course in about a month. The 15th level north is also being extended with the view of proving the north ground at greater depth. To what extent this new feature north of No. 2 shaft may develop, is, of course, uncertain. The 9th level drift has been in good lode for nearly 300 ft. This is a longer continuous copper course than has been seen below the 3d level, and is, at least, encouraging. Still the lode is pockety in the main, and it is not safe to predict much beyond actual sight."

A NEW ELECTRIC MINE HOIST.

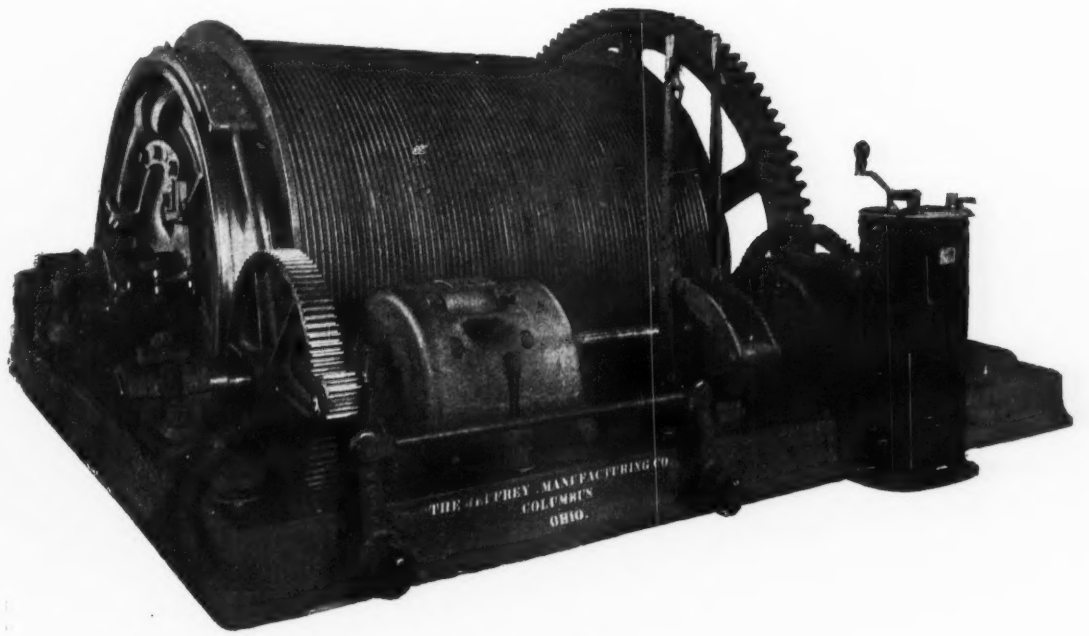
The application of electric power in coal mine operations is steadily increasing, as its advantages are more fully appreciated and its principles better known. Among the recent installations is an electric hoist built by the Jeffrey Manufacturing Company for the Priceburg Mine, at Dickson, Lackawanna County, Pa., which forms a part of a complete electric plant being placed at the mine, including an 80 H. P. electric locomotive, a 100 K. W. generator and other machinery.

This hoist is of special interest, as it is on a new line of construction. As will be seen from the illustration, there are two motors, the armatures of which are not connected together, except by means of the gearing on the second shaft. There were a number of reasons for this construction outside the advantages of the two motors, one being that the motors are interchangable with the motors on the locomotive; the armatures field-coils, brush-holders, etc. The next reason was that the amount of work required from the hoist being variable and the speed of hoisting required to be the same, it was necessary to have some efficient means of controlling the speed of these motors. It might be said the shunt motors could be used here, but for hoisting service it has been shown that shunt motors do not make a good arrangement, therefore it was necessary to have series machines. Another advantage is the small space required where two motors are used side by side. Still another is, that the chances of breakdowns and delays are just half what they would be with one motor. If one of the motors on this hoist requires to be repaired there is still one left, which will, for the time being, take care of the work until the other one is repaired.

It is well known that a series and parallel controller is an efficient method of controlling the current on street cars, and it is only logical to conclude that this same system applied to controlling the current on a large hoist will prove equally as efficient. By making the arrangement shown, the company has succeeded in building a compact, neat hoist and entirely doing away with a large amount of dead resistance that is usually used for controlling this class of machinery, substituting in its place a series and parallel controller, so that the hoist can, with this arrangement, be run at one-half speed at its maximum efficiency.

The general dimensions of this machine are as follows: Diameter of drum, 7 ft.; face of drum, 7 ft.; grooves for 1¼ in. rope; diameter of main gear, 9 ft. × 8 in.; face, 4 in. pitch; diameter of friction-band ring, 6 ft. 3 in. × 8 in. face. The bearings are all very large and of heavy construction. As will be seen from the illustration, the bed plate is made of two pieces joined together with heavy wrought-iron shrinking rings. The gearing on second shaft and pinions on armatures are of steel and cut involute teeth.

As will be seen from the Illustration, the hoist is of the friction type, having an internal friction gear. It is to be used from the upper end of the slope for hauling cars out of the butt entries into the main entry, and lowering them down to the level track, where they will be made up in trips for the locomotive to haul out to the shaft. The advantage of this arrangement becomes more apparent when it is considered that it is going to be placed 5,000 ft. from the power house upon the side of a mountain, where it would be practically impossible to use a steam plant, as there is no water to be had conveniently, and it would be difficult and expensive to carry coal for firing the boilers.



A NEW MINING HOIST.

A New Diamond Field.—A correspondent of the "Cape Times," writing from Lourenco Marques, says: A discovery of some note, illustrating the wealth of the unexplored portions of the Transvaal and adjacent territories, has just been reported. Two pioneers, known throughout the whole of the gold-fields and Swaziland, have as far back as 1886 known of the existence of garnets and rubies at the Lebombo Flats. After years of perseverance and toil, their efforts have been rewarded. They have found at Mahasha, a place 30 miles distant from here, a deposit of carbon, which contains garnets and rubies, and other infallible signs of diamonds being close at hand. Mahasha is the boundary of the Transvaal, Swaziland and Portuguese territories. The beacons meet at a mount named Manango Point, which is in the Mahashas district. The Mahashas are a tribe of mixed breed, between Swazies and Tongas. For many years the two prospectors have made annual visits to this district, trying to locate the vicinity of the mine, and now diamondiferous soil has been found of a promising nature. One of the prospectors has had experience in Kimberley and other mines, and has an extensive knowledge of everything appertaining to diamond mining. These old diggers are so extremely reticent, especially when "on a lay," that it is difficult to ascertain localities, etc. Owing to the fortunate fact that a gentleman of position and standing knew of their movements, which, together with the fact that this spot "Mahasha," was always thought to be, by old diggers, worth prospecting, the news reached my informant while in Swaziland, and he ascertained from the natives the precise spot. It is still an open question whether Portugal can lay claim to this diamondiferous soil, or whether it will eventually prove to be in Swaziland only.

Joule's Thermometers and the Mechanical Equivalent of Heat.—At a meeting of the Manchester Literary and Philosophical Society, held on Tuesday, Professor Schuster read a paper giving the results of a comparison of the thermometers used by the late Dr. Joule in his determination of the mechanical equivlaent of heat with the standards of the Bureau International des Poids et Mesures. The thermometers used by Dr. Joule, which were exhibited, were made and calibrated by the late Mr. Dancer in 1844. Much depends on the composition of the glass in regard to the results given by thermometers; either potassium or sodium glass will give good readings, but a mixture of the two will not. The precise nature of the glass of Mr. Joule's thermometers cannot be ascertained without subjecting the material to analysis, which is of course impossible without injuring these interesting memorials. With a view to an accurate comparison of the results of different investigators of the mechanical equivalent of heat, it seemed desirable to find the scale value of Joule's thermometers in terms of some fixed or easily-reproducible scale, and it was with this object that Professor Schuster undertook the comparison. Thermometers of hard French glass having a definite chemical composition have been investigated with great detail for the Bureau International, and have been compared directly with the air thermometer by M. Chappuis. A comparison of the scale value of Joule's thermometers with that of those made of French standard glass now in use showed that for all practical purposes the temperature intervals were identical. The author of the paper was thus able to reduce Joule's mechanical equivalent to the air thermometers of the Bureau International. The equivalent given by Joule in terms of water at 60° Fahr. and the latitudes of Greenwich was 772·55, which, reduced to Chappuis' nitrogen thermometer, gives 774·65, and to the hydrogen thermometer, 774·94.

The Price of Ozone.—In a paper by Dr. Froelich in the London "Electrical Review," January 18, he gives the quantities of ozone required for various purposes. Twenty grams are produced by 1 H. P.-hour costing in Berlin about 4c.; this will bleach 110 pounds of linen as well as grass bleaching during 3 days; it will bleach and refine 88 pounds of potato starch, in the presence of some chlorine, to such a degree that the color becomes a clear white, and the bad odor and tastes are removed; if this is roasted and ozonization continued, a product resembling gum arabic is obtained; 20 grains of ozone being sufficient for 66 pounds of this product; the same quantity will ozonize a room containing 8 000 cubic meters in such a way that healthy persons can just endure it; the quantity has the same oxidizing effects as 1·1 pound of the ordinary solution of peroxide of hydrogen.

The Scotch-American Oil Combine.—Advices from Glasgow announce that at a private meeting of representatives of the Scotch oil companies held in that city, the subsidiary agreement between the companies themselves to adjust the price and curtail production was finally signed, and as the arrangements with the Standard Oil Company of America are also complete, the Scotch-American combination is now an accomplished fact. A meeting of candlemakers has been called in order to take steps to advance the prices. The London "Financial Times" says the details include the important understanding that Scotch companies, if they deem it desirable, shall advance prices of wax another farthing per pound year by year, which is equal to £2 6s. 8d. per ton. Managers state that the agreement will revive the Scotch oil industry.

A Large Derrick.—The largest derrick in the world is said to be that used in the granite quarry of C. E. Tayntor & Co., at Barre, Vt., says "Stone." Its mast is 99 ft. high, and is held by 10 guys, each running out about 200 ft. to heavy anchorages. The boom can swing around a circle 142 ft. in diameter, and like the mast is built of Phœnix columns. The loads are hoisted by means of a steel wire rope 1¼ in. in diameter, and the boom itself is handled with a similar rope of ⅞ of an in. diameter. Over a mile of steel rope was used in rigging the derrick, and its weight, exclusive of the rope, is about 50,000 lbs. It is operated by means of a hoisting engine, and so well are all parts designed that a pull of 200 lbs. at the end of the boom will revolve the whole appliance when the boom is horizontal and loaded with 37½ tons. The derrick has been tested with a load of 57½ tons; although designed to carry only 40 tons; and if the ropes were heavy enough, the remainder of the apparatus has has suffient strength to carry loads of 80 tons. It replaces a derrick which had a mast and booms of very large sticks of pine, but the largest which could be procured were unable to raise with safety the heavy loads that had to be handled occasionally in the quarry.

A New Coal Port for South Wales.—For sometime past it has been felt that a dock with the same depth of water over its sill as at the Cardiff and Swansea docks was a pressing necessity for the western portion of the South Wales coalfield. In order to satisfy this want Miss Talbot, the lady of the manor, and her advisers, projected a scheme for a first-class coal port at Port Talbot, for which purpose an Act of Parliament was obtained last session. This scheme comprises a system of railways and a dock, the construction of the works for which is to be commenced forthwith. Geographically, the new dock is all that can be desired. It is situated in the midst of what is practically a virgin coalfield, and, by means of the railway to be made in connection therewith, it will be from 12 to 15 miles nearer than Cardiff, Barry or Swansea, to collieries having a present output of from 2,000,000 to 3,000,000 tons of coal per annum. The entrance to the dock will be protected by long breakwaters, so as to insure safety to the vessels using the port, while the dock itself will be fitted with the best coal lifts and other appliances for expeditiously and economically loading ships. The engineers to the undertaking are Messrs. James A. McConnochie, P.W. Meik and T. Forster Brown, the contractors being Messrs. S. Pearson & Son, of Westminster.

Preparation of Sprouting Graphites in the Electric Furnace.—Henri Moissan, in the "Comptes Rendus," says the sprouting may be ascribed to an abrupt escape of gas expanded by heat. The author's experiments prove that the sprouting graphites produced in laboratories may be as numerous as those met with in nature. They will also enable us to explain the formation of the natural sprouting graphites, some of which yield, as it is known, ashes most commonly very rich in iron oxide. These graphites seem to have been produced at a high temperature, without great pressure, in the midst of masses of iron which seem to have disappeared from the action of gaseous acids. Graphite resists most chemical agents. At dull redness it is not affected by watery vapor and air. It is thus found separated from its metallic gangue, and has formed masses where it has been disseminated in the rocks. From all these experiments we may conclude that a sufficient rise of temperature converts any variety of carbon into graphite, whether sprouting or not sprouting. Certain compounds, in particular iodized substances, may determine this transformation at a lower temperature, as it has been shown by Berthelot. These are reactions comparable to those of iodine upon ordinary phosphorus, which admit of polymerization being produced earlier without modifying the general direction of the phenomenon.

PATENTS RELATING TO MINING AND METALLURGY.

United States.

The following is a list of the patents relating to mining, metallurgy and kindred subjects issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Scientific Publishing Company upon receipt of 25 cents.

TUESDAY, JANUARY 22ND, 1895.

352,778. Apparatus for Manufacturing Water-Gas. Arthur G. Glasgow, Philadelphia, Pa. Combination of a boiler having fire-tubes; another boiler heated by means of the intermittent and varying volume and heat of the gases drawn off from the generator, a connection between the steam spaces of the two boilers, and a pipe for conveying steam.

532,780. Mining Tool. Frederick Hardy, Birmingham, Ala. Combination of a case having openings in the side and a spring at the bottom, a tubular shaft sliding in the case, a laterally movable cutter, a block fixed within the case and against which the cutter bears, a detachable tubular shaft having a cap piece and a pully, a push bar having a socket and an air tube.

532,783. Packer for Natural Gas or Oil Wells. Maurice S. Howe, Wabash, Ind. Casing having a packer head screwed into its bottom, and a horizontally compressible sleeve closely fitting the casing.

532,809. Method of Refining Copper. Thomas D. Nicholls, Skewen, near Neath, and Christopher James, Swansea, England. The method consists in crushing the matte, calcining a portion of the crushed matte, mixing therewith a suitable portion of uncalcined matte, charging the mixture directly into a refinery furnace and melting the same.

532,815. Bailer for Oil or Artesian Wells. William Plotts, McDonald, Pa. Bailer having an opening and guides on its outer face, and a sliding weighted valve engaging with the guides.

532,838. Electric Welding Apparatus. Elihu Thomson, Lynn, Mass., Assignor to the Thomson Electric Welding Company of Maine. Combination of several pairs of terminals connected in series with each other by the work held thereby, current-varying switches, one for each pair of terminals, each switch consisting of a cup containing a liquid contact and a hinged arm bearing a forked contact.

532,882. Mine Trap Door. Horatio Keyes, Terra Haute, Ind. Combination of trip arms pivoted at a suitable distance at each side of the door, a pressure strip, a guide carried by the pressure strip, and a pivoted lever.

532,895. Process of Extracting Gold or Silver from Ores. John C. Montgomerie, Dalmore, Stair, Scotland. The process consists in adding an oxide of one of the alkaline bases to a cyanide solution, then mixing the solution with the ore or compound, conducting the process under pressure of oxygen, and afterwards separating from the ore the liquid containing the gold and silver and treating the liquid in any approved way for the recovery of the precious metals.

532,903. Calcining Machine. Walter S. Pierce, New York, N. Y. A cylinder having a series of shelves or receptacles, arranged one above the other with openings at the bottom, an outer casing having a chamber within which the receptacles are arranged, and means for supplying the cylinder with products of combustion to heat the receptacles, and flues arranged above the receptacles to carry the products from the cylinder to and through the chamber.

532,956. Means for Concentrating Ores or Other Substances. Walter J. Hammond, London, England, and John Gordon, Rio Janeiro, Brazil. Combination of a shaft, a disk or wheel eccentrically mounted thereon, and a vessel carrying a ring mounted to turn on the wheel and provided with an extension or handle having guided movement in a fixed bearing.

533,018. Grinding or Crushing Machine. Jerome Prince, Milford, Mass. Assignor of one-half to Edwin Morgan, same place. A frame having compartments, horizontally disposed male and female toothed grinders working therein, gearing arranged to turn the grinders in opposite directions, a hopper common to all the compartments and a separate slide for each, with discharge openings at both ends of the grinders.

533,019. Blast Furnace. Philetus C. Reed, Sharpsville, Pa. Combination of a bell covering the mouth of the furnace, gas conduits in the wall of the furnace surrounding the bell, and stacks extending from the platform above the furnace leading from the conduits.

TUESDAY, JANUARY 29TH, 1895.

533,040. Hydrocarbon Burner. John L. Arnold, Toledo, O. A hollow vaporizer having inclined sides, a mixing chamber, an oil supply and a gas pipe extending through the mixing chamber into the vaporizer, an adjustable mixer and a diaphragm in the mixing chamber extending from the under side of the generator to the bottom of the chamber.

533,058. Brick or Tile Kiln. Albert Gudeman, Eureka, Ill. Combination of a wall having a series of vertical flues formed therein, a series of horizontal flues formed in the wall below the line of entrance, fireboxes, a series of flues located under the floor, a central draft chamber and a central horizontal flue.

533,074. Fuel Gas Burner. David Mitchell and Elmer D. Abbott, Dayton, O. Said Mitchell Assignor to Benjamin Gates, New Lebanon, N. Y. Combination of a furnace or stove, a plurality of segmental burners, each of which is supported on its respective inlet pipe to form a complete circular burner; bottom plates for the segments provided with radial projections to maintain the segments in position.

533 090. Brass Crucible Furnace. Eugene M. Scoville, Chicago, Ill., Assignor to the International Gas and Fuel Company, same place. Combination of a combustion chamber having an injector burner for supplying a hydrocarbon fuel thereto, a crucible chamber at the rear of and communicating with the combustion chamber, a foundation or support for the crucible having heating passages and an overflow notch to which the bottom of the crucible chamber converges.

533,114. Clay Mill. Horace B. Camp, Cuyahoga Falls, O. A vertical, central shaft, an annular horizontally revolving bed, a number of vertically revolving wheels arranged to run thereon, mounted on axles anchored against revolution with the bed.

533,139. Method of Casting Metals. John A. Potter, Munhall, Pa. The method consists in moving a series of molds successively over a common casting gate, thereby allowing the metal to flow into one mold before it ceases flowing into the preceding mold.

533,157; 533,158; 533,159. Steam Engine. Milan C. Bullock, Chicago, Ill. Combination of single-acting high and low pressure cylinders and an intermediate receiver in open communication with the high pressure cylinder.

533,170. Machinery for Cutting Coal, Stone or other Hard Substances. Thomas Heppell, Birtley, and William Patterson and John G. Patterson, Gateshead, England. Combination of a radial backstay carrying a cutter bar in inner and outer bearings and a scraper chain underneath the backstay with a trolley by a pivot, adjustable bolts and locking pin.

533,184. Loading Machine. John A. F. Svenson, Scranton, Pa., Assignor of two-thirds to Carl W. McKinney, same place, and John C. H. Wehrum, Elmhurst, Pa. Combination of inclines for receiving the bars as they are brought from the mill, and carriers for receiving the bars as they leave the inclines, of a movable stop extending normally above the face of the inclines and a catch.

533,275. Carburetor. Harold Collet and Moska Merichenski, London, England. Combination of an outer casing or vessel, a porous distributer having in its upper part a central chamber to receive hydrocarbon and provided on its outside with a channel for passage of air or gas to be carbureted.

533 287. Forge. Samuel L. French, Ligonier. Assignor of one-half to John C. McFadden, Rillton, Pa. Combination of an open hearth and hood, an air compressor, and a valved branch blast-pipe.

533,362. Concentrator. Jacob Lampert, Hill City, S. Dak. A table having a series of diagonally arranged corrugations and a longitudinal bead, a receiving trough, adjustable supports, means for vibrating the table laterally, and a pipe for spraying water along the beaded edge of the table.

533,381. Method of Grinding Mica. Robert W. Traylor, Richmond, Va. The method consists in subjecting fragments of mica to a pressure and twisting action between the elastic-covered runner and bed of an edge-runner mill.

Great Britain.

The following is a list of patents published by the British Patent Office on subjects connected with mining and metallurgy:

WEEK ENDING FEBRUARY 9TH, 1895.

5831 of 1894. A. E. Hetherington, F. Hurter and E. K. Muspratt, Widnes. Making an alloy of sodium of potassium and lead by electrolysing a solution of sodium or potassium hydrate with a lead cathode.

24535 of 1894. M. M. Marcus, G. Buffier, E. Marcellot, and G. Dardespinne, Paris, France. A ferra-zinc alloy, made by first heating iron scrap with carbonaceous material to a white heat and then introducing metallic zinc.

WEEK ENDING FEBRUARY 16TH.

5832 A. E. Hetherington, F. Hurter, and E. K. Muspratt, Widnes. Manufacture of cyanide of sodium or potassium, by heating ferrocyanide of sodium or potassium with an alloy of lead with sodium or potassium.

25989 of 1894. T. T. Oliver, Chicago, Ill., U. S. A. Separating metals from matter by passing a current of electricity through the molten mass, so that the metals shall adhere to a metallic negative-pole and the slag pass off.

PERSONAL.

Mr. D. C. Bates has been elected a director of the Consolidated New York Mining Company, of Nevada, in place of the late C. C. Harvey.

Mr. Wm. J. Nicolls has been appointed general sales agent of the Berwind-White Coal Company. His address will be Betz Building, Philadelphia, Pa.

Mr. Albert F. Noyes and Mr. Allen Hazen have formed a partnership and opened an office in Boston, Mass., as consulting engineers. They will make a specialty of problems in water supply, sewerage and sewage disposal, and particularly of filtration.

Dr. George M. Dawson, C. M. G., has been appointed director of the Geological and Natural History Survey of Canada, to succeed Dr. A. R. C. Selwyn, who retires after 25 years of service. Dr. Dawson was born in Pictou, N. S., in 1849. He is the son of Sir William Dawson, the eminent geologist, author of "The Canadian Ice Age," published by the Scientific Publishing Company, and other well-known works. In 1869 Dr. Dawson entered the Royal School of Mines, London, where he took the full course, devoting especial attention to geology and palaeontology. He engaged in various geological surveys for the Canadian Government. He is the author of several reports, the most important of which are: On the Queen Charlotte Islands, including as an appendix a monograph on the Haida Indians (1878). On an exploration from Port Simpson on the Pacific Coast to Edmonton on the Saskatchewan (1879). On the region in the vicinity of the Bow and Belly Rivers (1882-4). On the Physical and Geological features of part of the Rocky Mountains (1885). Notes to accompany a Geological map of the Northern portion of the Dominion of Canada (1886). Author (with Dr. Selwyn) of Descriptive Sketch of the Physical Geography and Geology of Canada (1884). Author (with Dr. W. F. Tolmie) of Comparative Vocabularies of the Indian Tribes of British Columbia, with an Ethnological map (1884). Also numerous and valuable original papers on the geological, geographical and ethnological observations made in the course of his explorations and contributed to various technical journals.

OBITUARY.

Richard Benson Wigton, a prominent coal operator, died in Philadelphia, Pa., on February 22d, aged 77 years.

Robert Lee Hall, vice-president of Hall Bros & Co., Incorporated, the well-known pig-iron dealers of Louisville, Ky., died in that city on February 13th.

Karl F. Denison, a well-known assayer of Leadville, Colo., died at that city on February 25th from accidental poisoning by cyanide of potassium. He was originally of Geneseo, N. Y.

Phillip Collins died at his home in Ebensburg, Pa., on February 24th, aged 74 years. He was noted as a railroad contractor, having been associated with his brother, Thomas Collins, of Bellefonte, in the construction of railroads for the Pennsylvania Railroad Company and other companies. The celebrated Sand Patch tunnel, near Cumberland, was one of their most successful undertakings, many prominent contractors having lost fortunes in attempts to build it.

Frederick Crocker died at Idlewood, Pa., on February 23d, aged 64 years. He was one of the pioneer oilmen of the United States, and was widely known from his inventions and developments of new fields. When the first oil was struck he set out for Oil Creek. There he accumulated $250,000. Afterward he was the first man to drive a well in the famous Bradford field. He went next to Olean, N. Y., and opened up the oil territory there. In 1882 he went to the Washington field with the Niagara Oil Company, and since lived in Pittsburg. He was famous as an oil scout, and it was on his judgment that the Niagara Oil Company, composed of Buffalo capitalists, determined to lease 100,000 acres in the Washington field.

Samuel Dana Horton died at the Garfield Hospital in Washington, February 24th. He was born in Pomeroy, O., about 52 years ago, and first came before the public as the author of a treatise on "Silver and Gold," which was published in Cincinnati in 1876. In this work Mr. Horton took ground in favor of international bimetallism and against remonetization of silver by separate action of the United States. When the Paris Monetary Conference of 1878 was appointed, Mr. Horton was made secretary of the American delegation, and at the request of the latter was admitted as a member of the conference. He prepared the report of this conference which was published by our government. In the Conference of 1881 he was one of the four American delegates. His later works are one entitled "The Silver Pound," and another entitled "Silver in Europe." His death was unexpected.

SOCIETIES AND TECHNICAL SCHOOLS.

Montana Society of Civil Engineers.—The regular monthly meeting will be held in Helena, Montana, March 9th. Mr. A. S. Hovey will read the report of the committee on the De Lacy memorial, and the society will take final action on it. Other business will come before the society.

A proposed School of Mines for Montana.—A bil has been introduced in the Montana Legislature by Representative Howard Paschal, providing for the erection and equipage of the State School of Mines, and providing for a fund for the same. The bill has passed its first and second readings.

Arizona School of Mines.—The contract for the new machinery ordered for the School of Mines at Tucson A. T., has been awarded to Fraser & Chalmers. There will be a full carload, comprising a crusher for fine work, a 5-stamp mill with 600 lb. stamps, feeder, plates and all appurtenances; a 3-stamp mill with 250 lb. stamps for treating small lots, a sample grinder and automatic sampler.

Canadian Society of Civil Engineers.—A meeting was held in Montreal on February 28th, at which a paper on "A Micrometer Attachment" was read by Wm. T. Thompson. A discussion followed on Mr. Gray's paper on "The Great Lakes, Their Commerce and Physical Features"; on Professor Bevey's paper "The Strength of Canadian Douglas Fir, Red Pine, White Pine and Spruce," and on Mr. Smith's paper on "Cement Testing."

The Association of Engineering Societies.—This now comprises the following organizations: The Boston Society of Civil Engineers, the Western Society of Engineers, the Civil Engineers' Club of Cleveland, the Engineers' Club of St. Louis, the Civil Engineers' Society of St. Paul, the Engineers' Club of Kansas City, the Engineers' Club of Minneapolis, the Montana Society of Civil Engineers, the Denver Society of Civil Engineers the Association of Engineers of Virginia, and the Technical Society of the Pacific Coast.

Lake Superior Mining Institute.—The third annual meeting of the Institute will begin on Wednesday morning, March 6th, 1895, at Duluth, Minn , and end at the same place on Friday evening, March 8th. After the arrival at Duluth a train will convey the members to some point on the Mesabi Range, probably to Virginia. From Virginia the party will work east on Thursday, arriving in Tower on Thursday evening. On Friday visits will be paid to the mines of the Vermilion Range at Soudan and Ely, and the party will be returned to Duluth the same evening. Meetings for the reading and discussion of papers and transaction of business will be held in Virginia and Tower.

Wyoming Historical and Geological Society.—The annual meeting of the Wyoming Historical and Geological Society was held at Scranton, Pa., on February 25th. The following officers were chosen: Stanley Woodward, president; H. L. Jones, Eckley B. Coxe, Calvin Parsons, and G. Murray Reynolds, vice-presidents; Edward Welles, H. H. Harvey, Charles A. Miner, S. L. Brown, and Richard Sharpe, trustees; A. H. McClintock, treasurer; Sidney R. Miner, recording secretary; H. E. Haden, corresponding secretary; librarian, J. Ridgeway Wright; assistant librarian, H. R. Deitrick; curators, mineralogy, Irving A. Stearns; paleontology, R. D. Lacoe; archeology, J. Ridgway Wright; numismatics, Rev. H. E. Hayden; historiographer, George B. Kulp; meteorologists, Dr. F. B. Hodge. Resolutions touching the death of the late president, Sheldon Reynolds, were read. Messrs. Harvey, Hayden and Wright were appointed to revise the by-laws.

Engineers Society of Western Pennsylvania.—The society held its meeting on February 21st, in Allegheny, Pa. President Thomas H. Johnson appointed for the year the standing committees on library, programme, reception and rooms. Mr. E. Swensson presented a memorial on the death of Karl Amsler, a member of the Society, and the paper read in December by Mr. William A. Bole on "Losses in the Steam Engine" was discussed. Mr. John A. Brashear then gave a very interesting lecture on the optical and engineering problems associated in the construction of great telescopes. It was illustrated with lantern projections, showing among other pictures Galileo's old observatory and some modern observatories, including that at Allegheny.

The difficulties in the way of making glass were set forth, and pictures as well as brief descriptions of the growth of the telescope from the Chinese of 2,000 or 3,000 years ago, with which crude appliances the Orientals obtained results which astronomers since have not needed to correct, down to the great telescopes of the Paris, Lick and Chicago observatories with their convenient and easy adjustments.

On the evening of the 22d the chemical section of the Society held a meeting in which, after the usual routine business was transacted, Dr. E. S. Johnson, chemist of the Black Diamond Steel Works, read a paper on "The Chemical Institute of the Heidelberg University."

American Institute of Mining Engineers.—On March 27th a meeting of the institute will be held in Florida, which will comprise sessions at Ocala, Tampa Bay and St. Augustine (the principal sessions being held at Tampa Bay), and a tour through the State, including visits to leading phosphate regions, a day at St. Augustine, a day at Lake Worth, etc. The railroad companies have promised free transportation within the State (beyond Ocala); but the impracticability of providing suitable cars for the large special trains required, and the fact that hotel accommodations at some points will be inadequate, necessitate the engagement of Pullman sleepers for the whole trip. This increases somewhat the estimate of expense given in the last circular. A special train, composed of Pullman cars, will start from Washington (via Southern Railway, at Pennsylvania Railroad station, Sixth street) on Monday evening, March 25th. Special Pullman cars, leaving New York via Pennsylvania Railroad on that day, will be attached to this train. Members and guests who have secured places in these special cars can take their places in the train at any point between New York and Washington. The cost to each person taking the whole trip has been carefully estimated as follows, assuming New York as the starting point: Railroad fare to Ocala and return, $43.35; Pullman berth for 13 days, $26; meals and hotel bills (about), $40; total estimated necessary expense, $109.35. The above is offered as the best estimate that can be made, after much correspondence and inquiry.

Engineers' Club of Philadelphia.—A regular meeting of the club will be held on March 2d, at which a paper on "The Promotion and Improvement of Rapid Transit in Philadelphia" will be read. At the meeting held February 16th Mr. C. H. Ott described an ingenious solution of a problem in hydrostatics which had come under his notice at the town of Anniston, Ala., in 1882. Works there, established for the purpose of water supply and fire protection for the industrial establishments, consisted of a well 10 ft. in diameter, driven to a water-bearing stratum 80 ft. below the surface of the ground, and containing a double-acting, single-cylinder pump located about 15 ft. above the bottom of the well and worked from the pumphouse above.

As the town grew the supply from the well became inadequate, and a new well was started about 40 ft. east of the pumping-well. A shaft 6 by 12 ft. was driven to a depth of 120 ft., where a flow of water was had. In order to provide storage for water, and to connect the new shaft with the pumping-well, a timbered drift, 4 by 6 ft., was run to directly beneath and about 40 ft. below the bottom of the pumping well. The water-supply not yet being deemed sufficient an 8 in. well, cased with pipe, was bored in the new shaft to a depth of 230 ft. below the pump house floor, and a great flow of water was struck. The drills in passing through the disintegrated limestone, bored a much larger hole than 8 in. in diameter, so that large quantities of water passed up outside of the casing. When the depth of 230 ft. was reached the latter quantity was so great that the water level in the new shaft could not be lowered and maintained with the apparatus at hand to more than about 26 ft. below the pumphouse floor. An 8-inch hole was then drilled from the bottom of the pumping well to the drift below. It was still found impossible, with all of the pumps and jet apparatus available, to lower the water level in the pumping well to more than about 25 ft. below the pumphouse floor, thus furnishing an ample water supply.

Some months after these arrangements had been finished a failure occurred in the pump cylinder under 50 ft. of water, and with no apparatus available to lower the water in the well sufficiently to make the necessary repairs. After several expedients had been tried, the following contrivance was devised:

A balloon-shaped bag in dimensions about 3 ft. in diameter and 6 ft. long was made of six plys of bed ticking, roughly quilted into squares. The bag was soaked in linseed oil, and a quantity of rye flour inserted and well shaken around. An inch pipe terminating in a sleeve was inserted in the mouth of the bag which was then securely wired around the pipe. Sewn to the bottom of the bag was a stout ring and to this was wired a half pig of iron by a ring bolt inserted into its end. The bag was then wrapped tightly with twine into a cylindrical shape and was lowered into the drill-hole in the pumping well by means of sections of pipe until the weight struck bottom; by estimation one-half of the bag entering the drift below, the remainder being in the drill-hole. The inch pipe was then attached to the service main, through a stopcock and a pressure guage attached thereto, and the bag was slowly distended until a pressure of 50 lbs. per square inch was reached and maintained. The upper part of the bag swelled out and accommodated itself to the irregularities of the drill hole, the lower part of the bag swelled out into a bulb shape, the whole resembling an inverted champagne bottle cork. The drainage pump and steam jet were then set to work and speedily emptied the pumping well, the bag being held in shape during the lowering of the water by an interior water pressure of about 10 lbs. per square inch in excess of the exterior water pressure. The repairs to the pump having been readily made, the water was exhausted from the bag and the apparatus withdrawn.

As the materials not already on hand could only have been obtained by express in about 48 hours, and as the contrivance described was easily made and did the work so quickly that the pumping engine was stopped only about 10 hours, Mr. Ott considered that the treatment of this problem was a most ingenious and clever solution of what threatened to be a most serious condition of affairs for that neighborhood.

INDUSTRIAL NOTES.

At Sharon, Pa., J. J. Spearman and E. A. Wheeler who recently bid in the plant of the Aschman Steel Casting Company, will start it up, employing 125 men.

The report that the Andover Iron Company, of Phillipsburg, N. J., will move South is denied by the company, which says it has not even considered such a step.

Ground was broken at McKeesport, Pa., on February 26th, for an addition to the Sterling Steel Works to consist of a 12 and an 8-in. mill. The company, it is said, has received an order from Japan for heavy projectiles.

The Alabama Steel Works Company, Birmingham, Ala., refused the proposition made by the Bessemer Land Company to purchase the Fort Payne steel mill, and the plant will not be removed to Bessemer as was given out recently.

The Montauk Iron Works, with an office in New York city and foundry at Greenpoint, N. Y., is in financial difficulties, and Howard Allison has been appointed receiver of the company on the application of Walter W. Brett, a stockholder. He declares that the company is insolvent.

The Midas Gold Saving Machinery Company, of San Francisco, Cal., reports the sale of one Gold King amalgamator to J. D. Hammond, Portland, Ore., two to the Lemhi Mining, Milling and Reduction Company, of Montana, and one to the Golden Cross Mining Company, Hedge, San Diego County, Cal.

The Goulds Manufacturing Company, Seneca Falls, N. Y., has issued a new general catalogue, containing a complete list of pumps, hydraulic machinery, pump supplies, well tools, etc., manufactured by it. The catalogue is of convenient shape, neatly bound and printed, well illustrated, and with a full index. Many new forms of machines are illustrated and described.

The Westinghouse Machine Company has shipped a 150 H P. compound engine of the latest type to Alaska. The trade in foreign countries holds up well, orders having been completed for three 150-H. P. compounds to Mexico, 200-H. P. compound to Spain, 300 H. P. compound to France, 150-H. P. compound to Buenos Ayres, 800-H. P. compound to Havana, Cuba, besides a number of smaller engines to Russia and elsewhere.

The Sheriff has received two attachments against the Oxford Iron & Nail Company, of New York city, one for $1,890 and the other for $510. The company was formed in December, 1892, under New Jersey laws, by the creditors of the old Oxford Iron Company, with a capital stock of $1,000,000, and Samuel Sloan, President of the Delaware, Lackawanna & Western Railroad, became president of the company. The works are at Oxford, N. J.

An open competitive examination of applicants for the position of collector and laboratory assistant in the New York State Board of Health laboratory will be held at the rooms of the State Civil Service Commission, Albany, on March 12th. Candidates must be between the ages of 21 and 50 years, and must possess a knowledge of pharmaceutical chemistry and pharmacœpial preparations. The salary paid is $60 per month.

The annual meeting of the stockholders of the National Lead Company was held in Jersey City on February 21st. The attendance represented 203,659 shares of stock. The following directors were re-elected: President, W. P. Thompson, of New York; L. A. Cole, of New York; F. W. Rockwell, of Chicago; A. T. Goshen, of Cincinnati; D. B. Shipman, of Chicago. They are to serve until the third Tuesday in February, 1898.

The Kansas City, Fort Scott & Memphis Railroad, which owns the Kansas City, Memphis & Birmingham Railroad, will purchase the Little Lock & Memphis road. It is proposed to extend the latter via the southeast corner of Indian Territory into Northern Texas. As the Kansas City roads are heavy shippers of Alabama coal west, the opening up of a direct line into Texas will put the coal into that territory in great quantities.

The Berlin Iron Bridge Company, of East Berlin, Conn., has just completed for the Hartford & West Hartford Horse Railway Company, a new truss bridge 136 ft. long, over the Farmington River, at Farmington, Conn. The new boiler-house for the Stanley Rule & Level Company was designed by the same company. The side walls are of brick, the floors of iron and the roof of iron, covered with the Berlin company's patent anti-condensation corrugated iron.

The Edgar Thomson Steel Works, at Braddock, Pa., closed down on February 23d in all departments for an indefinite time. The Carnegie Steel Company has, it is said, no orders for rails on its books, and little prospects of receiving orders. The same is true of steel billets, the last order for which was completed on the 23d. Work will be resumed immediately upon the receipt of orders for either product. The blast furnaces will continue in operation.

At a meeting of the stockholders of the Jas. P. Witherow Company, held in Pittsburg last week, a report was presented showing that the financial condition is sufficiently favorable to warrant the resumption of work at the company's plant in New Castle. The plant has been idle for some time, but operations are expected to resume in the spring. The following directors were elected: Isaac Reese, H. W. Atwood, George Best, John Q. Denny, of Harrisburg, and James P. Witherow. The board elected Isaac Reese, president and George Best, treasurer.

The Crane Iron Company, reorganized in Philadelphia recently by electing Robert E. Hastings, Wm. S. Pilling, Robert F. Kennedy, J. A. Harris, Jr., Gordon Munges, Leonard Peckitt and Geo. M. Troutman as directors. The purchasers have placed the new organization in possession of the deed for all properties, and as soon as officers are elected deeds will be delivered to individuals who have arranged for purchases, as it is the intention to dispose of all outstanding properties and confine the business to the manufacture of iron. It has been decided to abandon the Philadelphia office and remove the principal office to Catasauqua, Pa.

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GENERAL MINING NEWS.

ALABAMA.

Jefferson County.

A fire took place in the Rock Slope colliery of the Tennessee Coal, Iron and Railroad Company on February 24th, resulting in the death of two miners. Eighteen men, who were hemmed in near the air-shaft, had a narrow escape from suffocation. The fire started in the engine-room and was extinguished before it became serious.

ARIZONA.

Yavapai County.

Big Bug Onyx.—A deed has been filed in the county recorder's office from George McCann to H. Routzham and Wm. O. Gilkey, conveying to the latter various parcels of the onyx quarries in Big Bug district, says the Prescott "Journal-Miner." The price is stated at $24,000.

Morning Glory.—A laborers' lien, covering in amount $1,600, due on wages, has been filed in the district court clerk's office against the Morning Glory mine and mill on Turkey creek by miners employed on that property. In addition to the above sum there is also hanging over this property another lien of $3,000 for which a foreclosure is petitioned. The property has undergone considerable trouble of this nature from the start, says the Prescott "Journal Miner." The mine in which the company is now operating is among the oldest in that section.

CALIFORNIA.

Amador County.

(From Our Special Correspondent.)

Philadelphia.—This mine, located four miles north of Plymouth, is running 10 stamps on rock taken from the open cut.

Calaveras County.

(From Our Special Correspondent.)

Angels Camp.—The Chaparral Hill, Rothschild Vanderbilt, Bright Star (quartz mines) and the Pacific Placer mines, located near Angels Camp, bounded by J. F. Crosett, of San Francisco, have been sold to Chicago parties for $150,000.

Ideal Placer Mining Water and Power Company.—This company has recently purchased the old Lancha Plana and Poverty Bar Ditch, which they are enlarging and improving. In the summer the company will irrigate the county north of Stockton, and during the spring, fall and winter will supply water to miners and use it on its own gravel banks.

North Star.—It is reported that Superintendent Harens, of the North Star mine, near Mokelumne Hill, is negotiating for a 60-stamp mill for that property. The North Star is a drift gravel mine on what is known as the Old Woman's Gulch Blue Lead.

Rodosena.—This mine, near El Dorado, is being investigated by San Francisco people. The mine has a large vein of low-grade ore.

Wheelock.—The old Wheelock mine, near the Sheep Ranche mine, has been bonded by Oakland people, who will at once begin further development.

Eldorado County.

(From Our Special Correspondent.)

Grand Victory.—This mine is located seven miles southeast from Placerville, on Squaw Creek, and comprises 160 acres. The mill is being enlarged to 50 stamps. Three rock-breakers are at work.

Lake County.

(From Our Special Correspondent.)

Eutopia Quicksilver Mine.—This mine near Bartlett Landing, abandoned some years ago, has started up again.

Mariposa County.

(From Our Special Correspondent.)

Old Martin—This mine is located near Hornitos. A tunnel is being driven on a vein which will run under all the old workings. This will not only cut any ore chutes that may exist, but will also drain the mine.

Whitlock.—This mine, owned by the Sierra Butte Company, located five miles north of Mariposa, employs 75 men. The three compartment shaft is down 200 ft. The new 50 stamp mill is being placed in position and the mill and other buildings are being pushed to completion as fast as possible.

Mono County.

Bodie Consolidated Mining Company.—The latest official weekly letter says: We extracted 13½ tons of ore from the workings from the winze 22 ft. below the 300 level, grade about $40 per ton. The east crosscut from the upraise 40 ft. above south drift from No. 1 west crosscut 400 level was extended 12 ft., passing through some small stringers of ore. The upraise from south drift 20 ft. above the 400 level was extended 22 ft. No change in this raise since the last report. The ore from workings from the winze below the 300 level continues of good grade.

Standard Consolidated Mining Company.—At the annual meeting of this company of Bodie district, held in San Francisco on February 18th, 76,641 shares of the capital stock of 100,000 shares were represented. There are 5,486 shares in the treasury. The following directors were elected: Thomas H. Leggett, William Borrowe, P. M. Lilienthal, A. P. Brayton and J. W. Pew, of San Francisco, and W. H. Oscanyon and C. H. Badeau, of New York. The following officers were chosen: Thomas H. Leggett, president and general manager; W. H. Oscanyon, vice-president; J. W. Pew, secretary; the Anglo-Californian Bank, treasurer in San Francisco, and the Farmers' Loan and Trust Company, registrars and treasurers in New York. During the past year the receipts of the company, including balances carried over from the previous year, amounted to $259,790, and the disbursement to $206,605. Four quarterly dividends of 10 cents per share each, amounting in all to $37,805, were included in these disbursements. The present balance on hand is $53,185, and at the meeting another quarterly dividend of 10 cents per share was declared, payable on March 20th.

Nevada County.

(From Our Special Correspondent.)

Wisconsin.—This group of mines has been bonded for $150,000 by J. F. Crosett, of San Francisco.

Derbec Blue Gravel.—This mine, which shut down several months ago on account of the ditch being blocked with snow, will start up in a few days with a full force of men.

Placer County.

(From Our Special Correspondent.)

Boulder.—This property is situated three miles from New Castle in the Ophir district. The company has an eight-stamp mill which will be put at work as soon as enough ore is in sight to give it continuous work.

Rough and Ready.—This mine is located one-half mile from Dutch Flat. Work is being pushed on the bed-rock tunnel, which is expected to strike the gravel soon.

San Diego County.

(From Our Special Correspondent.)

Noble.—A new stamp-mill is being constructed on the Noble group, three miles from Pine Valley. A large amount of ore of good grade is in sight. The mine passed into new hands sometime ago.

Siskiyou County.

(From Our Special Correspondent.)

Red Hill—This placer mine, located at Gilta, comprises 160 acres. Water, which is obtained through a ditch 3 miles long, is delivered through 15-inch and 11-inch pipes to 2 giants with 5-inch nozzles. There are two flumes, consisting of 90 and 80 boxes 3 ft. wide, which are cleaned up monthly. The last clean-up amounted to $2,500. The best pay is in the 3 ft. gravel next to the bed rock.

Tuolumne County.

(From Our Special Correspondent.)

Alta.—This mine is located 22 miles northeast of Groveland. A bedrock tunnel started to tap the old workings is in 1 600 ft., and has passed some good gravel.

COLORADO.

The following mineral surveys were approved by the United States Surveyor General for Colorado during the week ending February 16. Survey No. 9,265, Pueblo land district, Reindeer; 8,302, Pueblo, Manhattan; 9,308, Gunnison, Triangle; 9,313, Pueblo, Alma; 9,312, Pueblo, Falkner's Folly; 9,276, Pueblo, Laura Lee and New Pearl; 9,280, Pueblo, Philipian and Ranch; 499 Am. Dist. No 3, Curran; 9,309, Leadville, Yellow Jacket.

El Paso County—Cripple Creek.

(From Our Special Correspondent.)

American Eagle, 1, 2 and 3.—These properties were recently sold to Mr. Stratton, who has com-

menced to work by sinking a two-compartment shaft on No. 1, and preparations are being made for the erection of a steam hoist. The West shaft, from which about 30 cars of ore were taken, principally in December, has been leased.

Anaconda Mining Company.—The Anaconda this week made a shipment from the recent strike in the tunnel, which is supposed to be worth $100 per ton

C. O. D.—This mine ships about 100 tons of ore a month. At the 250-ft. level the south drift has been advanced 150 ft., and from present appearances it looks as if the ore-shoot was close at hand. The north drift has been advanced 50 ft. and the owners are sanguine that a new shoot of ore will be found shortly in that direction. The stopes above the 150-ft. level are yielding the usual amount.

Delmonico.—This property, owned by the Union Mining Company, is being worked by the lessees in good shape. A steam hoist is being erected to hoist from the 70 ft. drifts, and shipments of ore are regularly made. The shaft has been sunk 90 ft., but drifts will be started at the 70 ft. level.

Elkton.—This property, also on Raven Hill, employs 50 men and is now shipping about six narrow gauge cars of ore per week. This week some of the richest specimens ever found in the mine were taken from the stope in the second level. At the second level the north drift has been extended to the Catherine boundary 325 ft. from the shaft, and the south drift has been extended 150 ft. The second-class dump is being increased at the rate of 500 tons a month.

Gold & Globe Company.—The New Moon, on the north slope of Gold Hill, and worked under lease and owned by this company, made a shipment of 4½ oz. ore. The shaft has been sunk 7 ft., but drifts are being extended at 50 ft. The north slope of this hill is attracting more attention than for some 2½ years past.

Independence.—The output of this property is gradually increasing, until now its daily shipments are 90 tons of ore, which samples from 8 to 15 oz. of gold per ton. The shaft is now down 360 ft. and being rapidly sunk. The Lowell, on Battle Mountain, has been temporarily closed down, as a deep shaft with cross-cuts in every direction failed to find pay ore. The same applies to the Lost Anna, on the north slope of Battle Mountain, two purchases of Mr. Stratton, the owner of the Independence.

Lucky Girl.—This mine made its first shipment this week. The lessees, Messrs. Estey and Mudd, well known mining men of Leadville, and managers of the Union Leasing Company, feel highly encouraged over the recent showing both in the shaft and in the drifts, and contemplate extensive developments.

Nugget Mining and Milling Company.—The Catherine, on Raven Hill, owned by this company, employs 30 men, and ships 22 tons of ore weekly, which nets on an average a little over $60 per ton. The stopes in the second level—140 ft. deep—are yielding a much better ore. No stoping has been done below the second level, although the third level has been driven to the boundaries both north and south, and it appears the vein improves with depth. It is the intention of the company to erect a steam hoist so that stoping from the third level—200 ft. deep—may be carried on.

Orphan May.—The Klais lease is being systematically worked, and a steam hoist is in course of erection, as deeper workings are necessary if any more ore is to be extracted.

Pharmacist.—This mine is fast forging to the front. Its monthly shipments are increasing.

Pike's Peak.—This property on Bull Hill looks well. A rich seam was discovered in the north drift about two weeks ago, which assayed 65 oz. The seam has increased to 10 in. and the value is about the same.

Portland Mining Company.—Anna Lee, one of the principal shippers of this company, on Battle Mountain, has uncovered another ore shoot about 300 ft. north of the present shoot.

Raven.—The Lenty lease on the south end of the claim is being worked with ten men. The shaft has been sunk 100 ft. and drifts have been prosecuted, but thus far regular shipments have not been in order. The lessees on the north end of the claim are taking out rich ore, both from surface and also in stopes close to surface. The lessees on the Gregory are all doing well with their surface shafts, and shafts are being sunk and shafthouses are being erected, if not daily, at least weekly.

Lake County, Leadville.

(From Our Special Correspondent.)

Alleghany.—A large portion of this ground was leased a few days ago to Clarence Hersey and S. W. Mudd. Located as it is between the Small Hopes and Mikado group, it may be easily developed from these properties.

Bohn Shaft.—This is a city property developed by Major A. V. Bohn, and reports a rich strike of silver ore. At a depth of 480 ft. drifting was commenced. Two weeks ago a streak of iron was encountered. This was followed in 25 ft. and has opened up into a rich body of carbonate ore. Samples from the breast assay 380 ozs. silver and 22% lead. The strike is a very important one. The ore body is filled with chlorides. The body is at present 2 ft. wide, and is widening out as followed in.

Chemung.—The management is placing additional machinery in position in order to handle the heavy flow of water.

Chicago & Leadville Development Company.—Chicago and Leadville capital is at the head of this company. The properties to be worked are the Mountain Lion, Nos. 1 and 2 lodes. The shafts are on Bald Mountain, and the new work promises very satisfactory results.

Hulda Mining Company.—This company, which is sinking the Garbutt shaft, ha placed that new gold producer on the shipping list. The first shipment of ore was made last week, and consisted of 40 tons of iron sulphide assaying 30 ozs. silver and ½ to 1 oz. in gold.

Matchless.—Both shafts, 5 and 6, are being sunk. The 6 shaft caught the contact a few days ago. Shipments are regular from the lower workings, the ore running very high in silver and 50% lead.

Slide.—This property lies near the Doris. Work on a new shaft was begun last week, and it is expected to encounter the rich ore chute of the Doris.

Spot Cash.—Mr. Cash says that but little ore will be shipped until the ore bodies are opened up extensively. Since making the big strike in January the shaft has been sunk over 75 ft., and two drifts that have been run have opened up some good-looking mineral.

Mineral County.

United Mines Company.—This company, of Creede, has decided to float a stockholders' loan of $25,000 to provide for future development and allow the work to go on undelayed until the property becomes self-supporting, says the Denver "Republican." The following report has been issued to shareholders: "The end of the first 13 months of the company's existence find it not yet a paying proposition. The company has raised and expended the sum of $35,000, and it will require about $10,000 to liquidate bills falling due on March 10th next. The directors are satisfied that this money has been well expended and that the property will soon be placed upon a paying basis. We have our main working shaft 735 ft. deep, drifts extending therefrom a total distance of 890 ft.; a complete pumping plant, sufficient to raise 350 gals. of water per minute from our shaft for a distance of 1,000 ft; three boilers, hoister, shaft house, ore bins, assay office and fixtures, boarding house and all the necessary equipment to continue work. We have been greatly delayed and our expenses largely increased by reason of the quantities of water encountered. This has now been met and overcome. Our shaft for the last 50 ft. has been in ore running well in gold, silver and lead, and both drifts from the 700 ft. station are in similar ore as far as they have been run. We commenced shipping in January and have realized over $1,000 net since that time. But little more depth must be gained before we can pay expenses, and to do this money must be borrowed."

San Juan County.

At Silverton, motive power is derived from a distant water course. Three miles away a special double nozzle Pelton Wheel, 4 ft. in diameter, running at 225 revolutions per minute under a head of 180 ft., has been installed. This drives a 150 kilowatt 2,300 volt General Electric Company three-phase generator. The greater part of the current is taken to a 125 H. P. induction motor, which operates the mill, and which, wound for 2,000 volts, is used without transformers. The balance of the current is utilized at the mines for the operation of arc and incandescent lamps, and driving smaller motors operating pumps, ventilators, etc., the pressure of the secondary current for these motors being reduced, by step-down transformers, to 220 volts.

FLORIDA.

The phosphate shipments from Port Tampa, for the month of January, are reported as follows: From Land Pebble Phosphate Company to Helsenburg, 3,200 tons; from Bone Valley Phosphate Company to Baltimore, 832 tons; from Bone Valley Phosphate Company to Baltimore, 568 tons; from Land Pebble Phosphate Company to Rotterdam, 2,800 tons; from Peruvian Phosphate Works to Pascagoula, 213 tons; from Peruvian Phosphate Works to Mobile, 353 tons; from Netherlands Phosphate Company to St. Louis du Rhone, 2,700 tons; from Florida Phosphate Company, Limited, to Hamburg, 1,809 tons; total for the month, 12,475 tons.

The shipments of phosphate rock from the port of Fernandina, Fla., for the month of January were as follows: 805 tons for Cartaret, N. J., from the Pebble Phosphate Co.; 1,910 tons to Hamburg, by Arentz & Co.; 2,015 tons to Hamburg, by Pickford & Winkfield; 910 tons to Baltimore, from the Pebble Phosphate Co.; 1,350 tons to Birkenhead, by Thuillier & Clark; 2,150 tons to St. Louis du Rhone, from the Dunnellon Phosphate Co.; total for the month, 9,200 tons.

The shipments of phosphate rock from the port of Savannah for the month of January are reported as follows: For Austria, 1,000 tons; 727 tons for Germany; for France, 2,577 tons, and for England with 1,000 tons, shipped by J. M. Lang & Co., making a total for the month of 5,644 tons.

IDAHO.

Shoshone County.

Gem.—This mine laid off about 45 men recently. But little more work than sinking the shaft and other development work below the tunnel level will be prosecuted for the next four months.

Mineral Point.—It is reported that negotiations are pending for the sale of this mine. The mine is situated about one-half mile south of Osburn. Three tunnels have been run to a total depth of 600 ft. with a 75-ft. shaft and about 200 ft. of crosscuts. The ore runs high in silver.

Standard.—The Union mill has been put in condition for service for the treatment of ore from the Standard mine, which will start up again next week, adding a force of about 40 men to the 10 now employed there. This mine has a good body of ore, which has been developed the past two months, ready for stoping. A new ore bin and other improvements have been completed at the mouth of the main tunnel.

KENTUCKY.

Henderson County.

An Owensboro syndicate recently bought at Commissioner's sale the coal mine at Baskett. The mine was opened about three years ago and the company expended $50,000 in improvements. Hard times came on and an assignment was forced, with liabilities of $30,000. A company was formed, composed of John and Lee Baskett, William Bennett, of Henderson, and C. L. Nall, of Owensboro, which brought up 70% of the claims at 50 cents on the dollar in contemplation of purchasing and reopening the mine. Cary & Marble, Harry Guenther & Bro., W. A. Guenther & Sons, Broeker Bros., and J. N. Grady, all of Owensboro, held claims amounting to $3,000, which were not included in the deal. They formed a syndicate, and when the property was offered at auction bid it in at $11,350. The property includes, besides mine improvements, mineral rights on 500 acres, a store with $3,500 stock, 28 tenement houses, mules and mine appurtenances. The new company, it is understood, proposes to capitalize and operate the mine for all it is worth.

MARYLAND.

Allegheny County.

Consolidation Coal Company.—The annual report of this company for the year ending December 31, 1894, shows:—Gross receipts, $2,175,482; net, $362,638; interest on funded debt, $116,900; dividend for 1894, $205,000; royalty fund, $44,292; balance to credit of profit and loss, $74,527. The royalty fund is now $663,185; funded debt, $2,120,000; coal mined by the company, 907,559 tons; coal transported by the company's railroads, 2,326,371 tons. The output of the company's own mines fell off 15 057 tons.

During the strike of May and June last only three out of the five mines were operated. This and the general depression were the causes of the decrease in revenue. The work of extensions has been continued during the year, and steam has largely been substituted for horse and man power. All of the expenditures connected with these and other improvements were charged to working expenses. Three hundred tons of new steel rails have been laid on the main line.

MICHIGAN.

Copper.

Wolverine Copper Mining Company.—At a meeting of the board of directors of this company, held on February 18th, the following resolution was adopted: That an installment of $1 per share on the capital stock of the Wolverine Copper Mining Company be, and hereby is, called in, and that the same be payable on March 25, 1895, at the office of the company in New York City, or at the office of the transfer agents, The American Loan & Trust Company, Boston, Mass., and that no stock be transferred on the books of the company after that date unless this installment shall have been paid thereon.' This call upon the stockholders is made for the purpose of providing means to pay for the purchase of 120 acres of land, or three sections, making the property of the company five sections. The possession of this property will add largely to the resources of the mine, and the directors are convinced that the interests of the stockholders demand its acquisition. The price to be paid for this property is $60,000, equivalent to $1 per share on the capital stock of this company, for which amount this call is made, as the directors do not think it wise to diminish the existing surplus or working capital.

MINNESOTA.

Iron—Mesabi Range.

(From Our Special Correspondent.)

Adams.—This company, which is owned in part by the Rockefeller syndicate, is running about 100 men, and one steam shovel. Another shovel will be added soon, and the force largely increased. An area is being stripped, and a shaft sunk for operating by the milling process, which the Minnesota Iron Company has employed at all but one of its Mesabi mines.

Fayall.—This company, a branch of the Minnesota Iron Company, has let the contract for a shaft house that will be the largest, and, with the exception of that at the Auburn, another Minnesota Iron Company mine, the best appointed on the range. At the mine only about 50 men are now at work underground developing, but a fine machinery plant has been ordered, and will be in before Summer.

Lake Superior.—This mine has new pumps, and will have the water out this week. It has been troubled far more than any other of the Mesabi mines.

Mesabi Chief.—The deal for the lease of this mine to the Penn Iron Company, with a privilege of purchase, has not yet been closed.

Mountain Iron Company.—This mine has laid off two steam shovels, the cuttings having been completed. There is some exploratory work now being done east of the mine proper, in the hope of finding just where the ore body extends in that direction. A vast amount of stripping has been done in the Winter by the shovels that have been at work, most of the time five having been engaged.

St. Louis County.

(From Our Special Correspondent.

Rainy Lake District—The Morning Star Island on Wild Potato Lake, Seine River, has been sold for the gold property on it for $20,000, and will be developed at once.

Two gold veins have been found on the shores of Calm Lake, an expansion of Seine River that has not before been explored. They are said to have excellent vein indications.

The Gilman property on Bad Virmillion Lake will be sunk 200 feet at once, and will be developed thoroughly before a mill is put in.

Two town sites are already plotted on the Seine River, and lots are being sold. At Fort Francis, the Hudson Bay town at the western end of Rainy Lake, there has been more activity all Winter than that town has seen in all its 159 years of life.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

JOPLIN, Feb. 25,

Saturday evening closed the most prosperous week that has been seen in this district for a year past. Considerable activity prevailed among the miners and mine operators in the way of making repairs after the cold snap and extracting all the ore possible for the advanced market. The different purchasing agents were after everything that was offered, and prices of zinc ore steadily advanced until two lots were sold at $21.50 per ton. The average paid for the week's productfon was about $22.50 per ton, as some operators had contracted their output for the week at $21 per ton. During the past seven years there have always been some surplus stocks of zinc ore in the hands of the operators, but at the present time the surplus stocks are all exhausted both with the operators and, it is believed, with the smelters. Therefore the latter, to keep running, must purchase from week to week as the ore is taken from the mines. The producer can thus practically dictate the price for his ore, regardless of the price of metal.

Lead ore maintains a standard price of $16 to $16.25 per thousand. Following are the sales of ore during the past week: Joplin, 1,560,470 lbs. of zinc ore, and 431,310 lead, value $25,670; Webb City, 1,217,360 lbs. of zinc ore and 191,240 lead, value $15,845; Carterville, 1,135,590 lbs. of zinc ore and 144,570 lead, value $14,016; Oronogo, 46,910 lbs. of lead ore, value $752; Zincite, 93,820 lbs. of zinc ore, and 8,430 lead, value $878; Alba, 42,000 lbs. of zinc ore, value $483; Spring City, 99,720 lbs. of zinc ore and 11,070 lead, value $1,274; Galena, Kans., 1,178,290 lbs. of zinc ore, and 220,180 lead, value $15,190; districts, total value $74,108. Granby, 291,120 lbs. of zinc ore, and 71,420 lead, value $3,996; Wentworth, 328,054 lbs. of zinc ore, value $2,630; Aurora, 798,000 lbs. f zinc ore, and 110,000 lead, value $8,564; Springfield, 44,000 lbs. of zinc ore. value $450; Marshfield, 70,000 lbs. of zinc ore, value $770. Zinc and lead belts, total value, $90,518.

Mr. O. R. Mollet, of Joplin, has just been granted a patent on a process for saving lead fumes in smelting. The process has been in use for some time at the Case & Searge smelter at Grand Falls, 5 miles south of Joplin, and has proved a success.

MONTANA.

Deer Lodge County.

Montana Mining Company, Limited.—The secretary of this company has issued a circular letter to the stockholders explaining why the 60-stamp mill stopped work on February 15th. Mr. R. T. Bayliss, superintendent and managing director, arrived in London a short time ago and had a conference with the directors, who concur with his views.

The 60-stamp mill was constructed specially for the treatment of low grade ores; that is to say, ore not exceeding a value of $10 per ton. In past years the tonnage of low grade reserves has always largely exceeded the reserves of high grade ore, but the conditions now are reversed, due to the fact that during the past 12 months the development of the mine, and particularly that of the New Castletown vein, has resulted almost entirely in the discovery of high grade ore (the low grade reserves consequently being considerably reduced), and the tonnage of low grade ore now available for extraction is not sufficient to keep this mill in regular operation without additional expenditure, which the directors do not think it advisable to incur. The Secretary says that, to maintain this low grade mill in operation at the present time, it would be necessary to employ 6 additional machine drills in the extraction of ore from various parts of the mine, and these drills must either be taken from prospecting work or provided at a cost of a considerable increase in monthly working expenses. The directors therefore have determined to shut down the 60-stamp mill until the accumulation of low grade ore in the mine is found to be of sufficient quantity to operate this mill continuously for some months. The adoption of this policy will not affect the regular monthly profit now being earned at the mine, as the grade of ore treated in the 50-stamp mill will be of higher value, and the directors are advised that this arrangement is fully justified by the accumulation and increased value of the high grade ore developed during the past year.

Missoula County.

Oro Fino Mining and Milling Company.—This company's property is situated on Deer Creek, near the Montana and Idaho line. The property was incorporated in 1894. The officers recently elected are: President and general manager, Charles A. Wing; vice-president, Burt Parks; secretary and treasurer, Harry S. Allen. It is a gold property. A five-stamp mill is now in course of erection and will be running shortly.

Silver Bow County.

Alice Mining Company.—There are 90 leasers at work at the Alice mine, and these, with the custom ore that is purchased, keep the 40 stamps or the Alice mill at work, says the Butte "Inter-Mountain." Two sets of timbermen are continually employed. Contrary to expectarions, the closing down of the Lexington added very slightly to the quantity of water in the Alice, and during the past six weeks even this has been gradually decreasing.

Clark Smelter.—It is stated that the old Clark smelter at Meaderville, which forms a part of the abandoned Boston & Montana plant, is to be blown in again shortly. The report is that the owners of the Rarus mine have obtained a lease of the smelter, and will run at least two of its four furnaces. David Matthews, formerly superintendent of the Boston & Montana smelter, it is reported, will have charge, says the Butte "Miner."

NEVADA.

Lander County.

Austin Mining Company.—According to the "Salt Lake Herald," General Manager Farnsworth has received advices from Austin to the effect that the development tunnel being driven by the company for the purpose of tapping the veins in some 18 claims has now reached a depth of 3,500 ft., or some 500 ft. more than half of its estimated length. Good progress is being made with the work and the working of the property is satisfactory. But one carload of ore is being taken out of the mines monthly, or just sufficient to pay all expenses of development.

Storey County—Comstock Lode.

Following are extracts from the latest weekly letters of the mine superintendents:

Alpha.—During the past week we have advanced the north lateral drift on the 450 level to a total length of 145 ft., face in porphyry, quartz and clay.

Alta.—During the past week we have extracted from the slopes above the 825 ft. level 130 carloads of ore of an average value, as per car sample, of $31.67. Battery samples average $26.10 and settler samples $4.36. The winze is down 16 ft. face in ore of fair milling value, 3½ ft. wide. Bullion valued at $16,500 has been shipped. It was the result of the clean up.

Belcher.—During the past week the mine yielded 14 tons of fair grade ore.

Bullion.—The west drift from the 820 level has been advanced during the week 15 ft.; total length, 1,365 ft.; face in porphyry and clay.

Challar.—We have extended a crosscut from the north lateral drift, 550 level, 17 ft., from which we will raise to connect with the south drift from the third floor of the stope. It has cut a streak of fair grade ore 2 ft. wide. Finding that the quartz in the winze below the 550 level was pitching flatter than the winze we ran a short crosscut from it, when down 37 ft., to the east. It disclosed a width of 10 ft. of quartz, variable in quality, assays from which go from $10 to $60 per ton, averaging about $25 as per box sample. We have sunk 5 ft. since then in about the same character of quartz, total depth, 42 ft. We have started to repair the 650-level winze. There is no change of note in the stope above the 550 level. We have extracted during the past week 250 tons and 500 lbs. of ore, the average battery sample of which was $30.06, and which has been sent to the Nevada mill for reduction.

Occidental.—The north drift from the west crosscut on 500 ft. level is now in 10 ft.; face shows 18 ins. of $50 ore. The south drift from said crosscut is in 11 ft.; face shows 8 ins. of $40 ore. We have started an upraise in the ore at the end of crosscut.

Potosi.—We are following the pay ore exposed in the south lateral drift, 450 level, by means of a raise, and are up two sets of timbers. The ore is about 2 ft. wide, of fair grade, samples running from $20 to $40 per ton. Repairs where necessary are under way.

Savage.—On the 950-ft. level the east crosscut from the fourth floor of the north upraise is advanced 45 ft.; face is in quartz giving low assays. On the 1,000-ft. level in the north drift from the east drift we continue to extract fair-grade ore from the sill floor up to the tenth floor. We have started a winze in this ore; the same is down 8 ft., following a stratum of ore assaying $30. On the 1,500 ft. level in the south drift from the east drift we are extracting ore of good quality. The west crosscut started from the face of the south drift is advanced 32 ft. This crosscut shows a width of about 8 ft. of ore; car samples average $35. During the week we have hoisted 96 cars of ore; car samples average $36.20 per ton.

Sierra Nevada.—During the week the southwest drift, started at a point 340 ft. from the mouth of the Layton tunnel, is out a total distance of 77 ft.; advanced 37 ft.; the face is in porphyry and quartz. The west crosscut from the Union Consolidated south lateral drift from the west drift, 1,520 ft. west of shaft, 900 level, was extended 15 ft. during the week; the face is in a formation of clay and porphyry, with a small flow of water. East crosscut, No. 3, from north lateral drift, 600 ft. north of the west drift, 1,520 ft. west of the shaft, 900 level, has been advanced to a total length of 129 ft., face in porphyry and clay. The joint west crosscut from the south lateral drift near the south line of the mine, 1,520 ft. west of the shaft, 900 level, has been advanced to a total length of 508 ft; face in a formation of clay, quartz and porphyry, with a small flow of water. The joint east crosscut, No. 3, from north lateral drift, 600 ft. north of west drift, 1,520 ft. west of shaft, 900-ft. level, has been advanced to a total length of 120 ft.; face in porphyry and clay.

NEW MEXICO.

Grant County.

White Signal.—Messrs. Brockman, Crawford, Penrose and Barringer have organized a syndicate for the purpose of developing and operating the gold properties at White Signal, says the "Silver City." They are now at work erecting a new Genisch mill, which will treat from 40 to 60 tons of ore a day. The necessary material is already on the ground and the machinery is in Silver City. The company has from 15 to 20 claims located, among them the Monitor, Chicago, Bright Star and Gold Bar. It is expected that the mill will be ready for operation about April 1st. The ore is said to be of high grade and carries a small per cent of copper.

Santa Fe County.

Atchison, Topeka & Santa Fe Railroad Company.—A terrific explosion of gas occurred on February 27th in the White Ash Mine of this company, three miles from Cerrillos, causing the death of 39 miners. Nearly 300 men are employed in the mine, but only 50 were at work when the explosion occurred. Only 11 of them escaped alive, and some of them may yet die. Relays of men have been working heroically to reach those who are still imprisoned in the mine, but little progress can be made on account of the gas. A bill was introduced in the New Mexico Legislature on February 27th to appropriate $5,000 for the relief of the widows and orphans. It will probably pass. The cause of the explosion is not yet known, and any facts are hard to get.

OHIO.

The Columbus Chamber of Commerce committee which investigated the distress among the miners of the Hocking Valley has made its report to the Governor. The report says, in part: Men whose entire yearly pay had ranged from $70 to $120 could not possibly support a family, and they have necessarily incurred debts. There are in round numbers 2,500 families which must be supported through their extremity. This commission is of the opinion that it will require $12,000 to accomplish this result.

PENNSYLVANIA.

Anthracite Coal.

Central Colliery.—A dispatch from Scranton says that the miners at the Central mine, in the Diamond, the Rock and the Big Veins, were forced to flee from their chambers on February 26th by a squeeze, which is gradually extending. The cracking and chipping of pillars is growing worse. There has been no surface damage as yet, but when the expected fall occurs a great deal is expected. At the last serious mine squeeze within city limits much damage was done to dwelling houses.

Lehigh Coal & Navigation Company.—The annual meeting of the stockholders of this company was held in Philadelphia on February 26th. The present management was re-elected without opposition. The annual report of the president and board of managers, which has already been published, was unanimously approved and the meeting adjourned. The election for a board of managers resulted as follows: Calvin Pardee, president; Joseph S. Harris, Edward W. Clark, Francis R. Cope, Charles Parrish, James M. Willcox, Edward Lewis, Samuel Dickson, Abram S. Hewitt, Thomas M. McKean, Charlemagne Tower, Jr., and Edward S. Buckley.

Second Anthracite District.—Mine Inspector Patrick Blewitt, of the second (Scranton) anthracite district, has made public his report for 1894. This report shows that there were mined in the district during 1894, 5,488,660.03 tons of coal at 45 collieries, while the average number of days worked in the district was 171.4. The number of fatal accidents in the district was 39, a slight increase over the previous year. The greater number of accidents was caused by falls of roof and premature explosions of blasts. Gas explosions caused no fatalities during the year, and the accident causing the greatest number of deaths occurred in the Pine Brook shaft in Scranton, when three men were crushed by a fall of roof.

Of the 45 collieries in the district sixteen are operated by the Delaware, Lackawanna & Western Company. The total number of men employed in and about these collieries is 6,782, of which 4,629 are employed inside and 2,153 outside the mines. At these mines 147,643 tons of coal were consumed and 51,211 tons were sold to local consumers. Thirteen locomotives and 996 mules and horses are used for hauling purposes in the mines of this company.

Advices from Hazleton state that there is a movement now on foot by the coal operators on the South Side for driving a tunnel which in magni-

tude will rival the great Jeddo tunnel just completed. The corporations interested in the project are the Lehigh & Wilkes-Barre Coal Company, the Lehigh Valley Coal Company, the Conlock Coal Company, Silver Brook Coal Company and several individual operators. The scheme is not a new one. Three years ago the matter was taken up by the different operators. Surveys of the line were made at the time, but through some hitch the matter was finally dropped. The serious losses sustained by the operators during the past two years have alarmed them, and the necessity for some means of protecting their mines has become more urgent. It seems that the only feasible method for overcoming the floods which are constantly increasing is to have a natural drainage. This has revived the project of tunneling, and the surveys already made from the foot of the Switchback Mountain to the mining center on the south side have again been taken up. These surveys indicate that the length of the tunnel will be nearly 5 miles. Maps are being prepared from the outline of the surveys. The engineer who is at work on the problem reports favorably a convention of mine owners and practical mine foremen will be called and the plans now being formed will be submitted for their inspection. To properly drain the Honey Brook works it would be necessary to commence the opening at a point in the Catawissa Mountain near the Switchback Arch. Such a development would drain the Silver Brook, Honey Brook, Audenried, Beaver Brook, Jeansville, and probably Coleraine and Beaver Meadow collieries.

Bituminous Coal.

A press dispatch from Pittsburg says that on February 26th, at a joint meeting of the Pittsburg Railroad Coal Operators' Association and bituminous operators of Ohio and Pennsylvania, who have heretofore remained out of the association, it was agreed to act in concert henceforth regarding the price of mining coal and other trade matters. The association will be completely reorganized to take in all the former independent operators, and a new constitution will be adopted. U. A. Andrews, of the Imperial Coal Company, and W. P. Dearmit, of the New York & Cleveland Gas Coal Company, have not yet joined the new association. Mr. Dearmit's wage cutting was generally denounced by Pittsburg operators, who are said to have held him responsible for the troubles in the district. The Pittsburg & Chicago Gas Coal Company, another concern which cut wages, was represented, but has not yet joined. Next week another meeting will be held to elect officers of the new organization. At the meeting a resolution presented by 10 operators representing both factions and advocating that the outside operators join the association was adopted. It was agreed to permit the present officers to use their pleasure as to retaining office and that the board of directors be increased to 15. The manner of voting in the new organization will be different from the old. Formerly each operator had one vote for every mine. This has been changed, and the voting will be on the tonnage basis. For every 50,000 tons output one vote will be allowed. President F. L. Robbins has already resigned, and Vice-President Chapman will resign before the next meeting. The question of dealing with the miners' organization was discussed. The new members favored dealing with none except the Pittsburg district organization of the miners. This was agreed to by the association members. Of 84 operators in the district 72 were at this week's meeting. The Eastern Ohio operators were well represented. Most of them have mines in both States. It was decided to abolish the differential of 9c. now held by the Hocking Valley operators. The Miners' Union officials are willing to concede the wiping out of the differential.

It is proposed to consolidate the bituminous coal interests of all the northern states by organizations similar to the one effected at Pittsburgh on February 26th. One reason for the organization being effected is that the Pittsburgh operators will hereafter attempt to control the lake trade and in that way secure higher prices for their coal. The operators of every state are expected to organize this spring, and the movement for the various operators' associations is said to be on foot already. The Hocking Valley operators have already organized and declared themselves ready to enter an agency scheme. Secretary Patrick McBryde, of the United Mine Workers, and organizer of the new Knights of Labor Union, approved the new organization of operators, saying the association would have a clear field to settle the mining trouble.

The miners of the Monongahela River convened at Monongahela City, on February 26th, and decided to strike for 69c., the old Columbus compromise rate. The convention was attended by 28 delegates from all parts of the river, representing about 8,000 men. President John A. Cairns and Secretary Warner attended the meeting. Mr. Cairns said he hoped the operators would grant the rate demanded. Should they not there will be a strike. No work is being done at the river mines at present, as the river is closed by ice. At the meeting a resolution was adopted to stand out for the 69c. It is reported that arrangements have been made that the miners of other coalfields take similar action to the end that last year's general strike may be repeated. Such a course of action is not unexpected.

Huntingdon & Broad Top Railroad Company.—Advices from Philadelphia state that the advance subscriptions for $1,497,000 5% 90-year gold bonds of this company offered to the public at $106 indicates that the issue will be a success. Messrs. Edward B. Smith & Co. and Charles D. Barney & Co. made a contract with the company for the purchase and extension for 30 years of its consolidated mortgage bonds maturing March 31st next, amounting to $1,497,000. The principal and interest of the extended bonds are payable in gold, and are free of all taxes. These bonds, at the price, are on a basis of about 4¾%.

UTAH.

Horn Silver Mining Company.—Now that the concentrator at the Horn Silver is operating again night and day, with 40 stamps dropping continually on ore, says the Salt Lake "Herald," the production of concentrates and the shipments to the smelters average something over 1,000 tons monthly, while the output of crude high grade ores for the same period runs between 800 and 900 tons. Some rich and extensive ore bodies are being opened up in the lower levels of the mines and in the concentrates considerable gold is making its appearance.

Juab County.

Cleveland Mining Company.—At the annual meeting of this company, operating in the Tintic district, held last week at Salt Lake City, the following board of directors was elected: T. P. Lews, president; William Harker, vice-president; G. G. Hardy, secretary and treasurer; W. A. Needham and R. E. Miller. Out of a total of 109,000 shares of stock 88,726 were represented. The meeting adjourned until March 20, when other matters of importance will be presented to the stockholders. The company owns the Cleveland group of claims between the Copperopolis and Mammoth. Active development is now in progress.

Millard County.

Ibex Smelter. — According to the Salt Lake "Tribune," the new Ibex smelter is handling the concentrates of the Horn Silver mine, for which the competition on the annual contract is very sharp. The Ibex smelter is nearer the mine than any other, and hopes to be able on that account to bid in a manner to retain the control of them. In addition to the ores of its own mine, which are reported to be showing up handsomely, and to the Horn Silver concentrates, the new smelter is handling the output of the Utah mine at Fish Springs, its proximity enabling the latter to considersbly increase its regular shipments. The Ibex now figures regularly among the enterprises whose product is handled by the Salt Lake city banks.

Summit County.

Alliance Mining Company.—The manager reports that the station on the tunnel level, a mile distant from its mouth, is now completed, the hoisting plant being adjusted and the shaft now at a depth of 20 ft. This is to be sunk 400 ft., at which depth the management expects that the vein will be intercepted and the active extraction of ores begun.

Daly Mining Company.—The annual meeting of this company was held in Salt Lake City on February 18th. The reports of the executive officers of the company showed that the earnings for the year, after deducting all expenses, among them being one-half of the expense of the work done in the drain tunnel aggregated $30,000, and in accordance with the action of the stockholders the amount was covered into the treasury to form part of the surplus fund, which has now reached about $260 000. A dividend will, therefore, not be declared, as had been expected by some. The reports showed that the property is in admirable shape.

Out of the 150,000 shares, 100,185 shares of the company's capital stock were represented at the election of directors, which resulted as follows: Robert C. Chambers, Richard Mackintosh, J. B. Haggin, George M. Scott and David Keith.

Ontario Mining Company.—According to a late issue of the "Salt Lake Herald," active work on the continuation of the Ontario drain tunnel from shaft No. 2 to shaft No. 3, on the 1,500 ft. level, a distance of 1,000 ft. was commenced on February 18th and will be pushed with all possible speed. The preliminary tests of the electric machinery have been made, and everything worked smoothly. The tunnel is now discharging nearly 1,000 cu. ft. of water per minute. This water, under a head of 120 ft., will be utilized to drive large low frequency alternating current generators for power and light—the three-phase system of the General Electric Company being employed. The current generated from these machines will be transmitted round the mountain to the Ontario and Daly mines, 5½ miles from the generating station, and be used to drive the mills and to light the surrounding buildings. A portion of the current will also be taken to furnish light to Park City. The voltage of the transmitted current is 2,500 volts.

Tooele County.

Mercur City Mining Company.—This company has been incorporated at Salt Lake by James Thompson, M. G. Stephens, J. H. Whalen, A. H. Carlson, B. T. Lloyd, B. P. Stratton and C. M. Garrison, with a capital stock of $300,000, divided into 300,000 shares of $1 each. The officers are: B. P. Stratton, president; C. M. Garrison, vice-president; B. T. Lloyd, secretary and treasurer, who, with James Thompson and J. H. Whalen, constitute the board of directors. The company owns the Elephant, Nos. 1, 2, 3 and 4, and the Greyhound, Nos. 1, 2, 3 and 4, mining claims, in the Camp Floyd mining district. These properties have just been purchased from C. L. Preuble. They are located near the Sunshine. But little development work has been done. At a meeting of the directors, held last week, it was decided to commence extensive operations just as soon as the season opens.

Mercur Gold Mining and Milling Company.—The first shipment of the product of the new mill of this company has been sent to the refinery. The gold was not extracted from ores taken out of the mines this year, however, the cyanides having been left in the tanks when operations were discontinued last fall at the old plant. When the new mill commenced active work the treatment of the filled tanks was first accomplished and the product was valued at something over $5,000, says the Salt Lake "Herald." Although the tonnage of the mill is being constantly increased the plant is not yet working to its full capacity and will not be for some time yet. At present the railroad is delivering on an average of 150 tons every 24 hours, and that amount is regularly handled in the works.

Sunshine.—This property at Mercur continues to hold its own. From the bottom of the incline shaft drifts have been run, one of which is 240 ft. in length, says the Mercur "Mercury." The ore, in quantity and quality, is as good as that which was first encountered,

WASHINGTON.

Lincoln County.

Deer Trail.—Harvey Jones is developing the Deer Trail No. 2, situated in Cedar canyon, about six miles from the Cleveland mine. The tunnel is now in 185 ft. It runs along a cross ledge. The ore of this claim assays high in silver. It is owned by Davenport parties.

WEST VIRGINIA.

Preston County.

(From Our Special Correspondent.)

C. M. Hill, of Binghamton, N. Y., and C. L. Marsden, of Marsden, last week purchased a tract of coal land in Preston County, aggregating about 1,000 acres, in the neighborhood of Albrightsville. The land is underlaid with the Copeland or Pittsburg seam, lying about midway up the mountain side, and about 200 ft. above the water levels. The tipples will stand about level with the levels recently taken by the Cheat River railroad engineers. The seam is 8 ft. thick, and dips to the south. At present the land is inaccessible, but the surveys for the Cheat River road are completed, and right-of-way secured from Uniontown to Rowlesburg. When this is finished it will pass through the property.

FOREIGN MINING NEWS.

FRANCE.

Coal Production.—The reports from the Pas-de-Calais, the most important coal district in France, show that there are 59 collieries in operation, and the total output in 1894 was 10,631,512 metric tons, an increase of 1,655,922 tons, or 18·4% over 1893. The more important companies and their output were: Leas, 2,286,185 tons from 11 pits; Courrieres, 1,497,207 tons from seven pits; Noeux, 1,087,010 tons from seven pits; Bully-Grenay, 1,063,885 tons from six shafts; Bruay, 1,020,093 tons from three shafts.

In the Bassin du Nord there were 40 collieries at work, and the total product for 1894 was 5,006 415 metric tons, a gain of 203,718 tons, or 4·3% over 1893. The leading company in this district is the Compagnie d'Angier, reporting 2,862,926 tons from 17 shafts. The second company is the Aniche, with 842,774 tons, and the third the Escarpelle, with 537,548 tons.

MADAGASCAR.

A London dispatch says that important discoveries of alluvial and reef gold, which were lately made in the district of Antsihanaka, situated north of Antananarivo in Madagascar, have since revealed the existence of a rich auriferous belt of hematite formation. At one point 1,000 oz. were taken by the native workers from one working at a depth of only a few feet. It is reported that in the immediate neighborhood of this discovery are six reefs, all showing gold. Over 1,000 natives are already working at these diggings on the license system.

MEXICO.

The "Mexican Financier" says that the following mining titles have been issued since the coming into effect of the new law on July 1st, 1892:

			No. of Grants.	Area in Hectares.
First half of fiscal year		1892-93	31	241
Second	"	" 1892-93	383	2,418
First	"	" 1893-94	339	2,020
Second	"	" 1893-94	622	3,899
First	"	" 1894-95	577	3,093

Durango.

A shipment of pig tin, amounting to 322 bars, passed through San Antonio, Tex., on February 9th, consigned to the Crook Refining and Smelting Company, of New York. It was shipped from mines near Durango.

SOUTH AFRICA.

Kimberley Roodepoort.—A 3,000-ton cyanide plant is being erected at this mine, says the South African "Mining Journal." It is well known that the reef is of the low grade quality, and only gives 4 or 5 dwts. per ton on the plates. Rich tailings cannot be expected from this class of rock, but it is supposed that 3 dwts. will be obtained from them. The

mine is being developed. The new shafts opened up to the east of the property during the last two years are abandoned, and all work is concentrated at the main shaft once more. The company has a low grade proposition to face. Some 40,000 tons of tailings are awaiting treatment, and everything is well ahead in the mine.

The following list of South African mining dividends during 1894 has been compiled by the "South African Mining Journal":

Company.	Cash Dividend.	Company.	Cash Dividend.
Block B. (Preference)	£5,694	New Jagersfontein	£50,000
City and Suburban.	42,500	New Kleinfontein	10,000
Consolidated Deep Level	37,500	New Primrose	112,000
Consolidated Gold Fields	187,500	Nigel	80,000
Consolidated Debentures	33,000	Orion	31,500
Crown Reef	60,000	Paarl Ophir	1,800
Cassel Colliery	7,500	Rand Central Ore Reduction	22,200
De Beers	987,500	Robinson	275,000
De Beers Debentures	199,375	Sheba	127,500
Durban-Roodepoort	75,000	Simmer and Jack	17,000
East Anglian	2,800	South African Gold Trust	21,000
Exploring	87,500	South African Gold Trust (Founders)	2,625
Ferreira	89,500	Stanhope	34,000
Geldenhuis Estate	60,000	Transvaal Coal Trust	33,000
Glencairn	25,000	Transvaal Gold	12 500
Jubilee	36,000	Treasury	8,000
Jumpers	30,000	Turffontein Estate	1,000
Langlaagte Estate	211,500	United Main Reef	26,000
Meyer and Charleton	45,760	Wolhuter	13,000
New Chimes	15,000	Worcester Exploration	45,360
New Hot	31,000		

The published returns of the Mining Department for the second and third quarters of 1894 show a steady increase in the output of that section. The following table shows the figures for the whole of the Republic, though of this the Witwatersrand field, consisting of Johannesburg, Boksburg, Krugersdorp, Florida, Doornkop and Blauwbank has yielded nearly the entire amount, showing 28,065 metres driven and sunk, and 730,701 tons ore extracted against 35,852 metres, and 907,085 tons for the whole Republic.

	June 30th.	Sept. 30th.
Metres driven	26,147	27,724
" sunk	7,082	8,128
Tons ore extracted	88?,937	907,085
Tons milled	823,130	851,702
Stamps working	2,922	2,928
Days milling	78	79 6
Tons per stamp per day	3·613	3·656
Concentrates produced (tons)	5,735	7,191
" worked "	4,652	6,587
Assay value (oz.)	3·912	3·467
Tailings worked (tons)	759,828	832,429
Assay value (oz.)	0·270	0·247
Whites employed	5,514	5,799
Colored "	42,671	43,049
Mill yield (oz.)	369,995	370,068
" " per ton (oz.)	0·449	0·435
Value (£)	1,330,709	1,331,546
" per ton	32s. 4d.	31s. 3d.
Concentrates yield (oz.)	18,032	21,894
" " per ton	4·065	3·324
" value per ton	304s. 1d.	250s. 2d.
Tailings yield (oz.)	173,766	182,307
" " per ton (oz.)	0·229	0·219
" value per ton	13s. 7d.	13s. 3d.
Alluvial (oz.)	919	1,120
Grand total (oz.)	563,222	575,389
" " value (£)	1,921,163	1,970,678

LATE NEWS

The F. E. Belden Mica Mining Company, Boston, has established a branch office at 182 Franklin street, New York, in charge of Union Adams, Jr., for the sale of ground mica, quartz, flint and silica.

The Youngstown Bridge Company, of Youngstown, O., Has secured the contract for Hannah's Run viaduct, on the Cincinnati, Hamilton & Dayton Railroad, and for two bridges on the Texas & Pacific Railway, including the tubular foundation work, 55 ft. in depth.

The gold output of the Witwatersrand district in the Transvaal for the month of January was 177,463 oz., a decrease of 4,641 oz. from December, but an increase of 28,149 oz., or 18.9%, over January, 1894. The month shows a higher production than that of any previous month, with the exception of last December. Of the total output for January, 58,634 oz., or 33%, is reported by the African Gold Recovery company as obtained by the cyanide process from concentrates and tailings.

On March 1st a number of important changes take place in the Carnegie Steel Company. James Gailey, superintendent of the Edgar Thomson plant at Braddock, will leave that position to enter the city as assistant to President J. G. A. Leishman. Mr. Gailey will have charge of the ore and furnace transactions. Thomas Morrison, superintendent of the Duquesne steel plant of the company, will take charge of the Braddock works. He will be succeeded at Duquesne by Master Mechanic H. B. Miller. In a few weeks the Carnegie company will move its offices into the New Carnegie building on Fifth avenue.

The Choctaw Coal and Railway Company, Indian Territory, filed its defence February 26th in the Common Pleas court, Philadelphia, Pa., to the suit recently instituted against it by the Allegheny Bessemer Steel Company, to recover damages for an alleged breach of contract. The allegation was that the Choctaw Company entered into a contract with the steel company for the purchase of 14,000 tons of steel rails. One thousand tons, it was alleged, were manufactured by the steel company and delivered to the Choctaw Railway Company, but that company refused to accept them. By reason of this breach of contract the steel company claimed damages to the extent of $45,000.

The Choctaw Company in its defense admits that a contract was entered into for the manufacture of the rails, but alleges that the rails tendered were not made according to agreement, and it was impossible for the railway company to use them. It is further set out that at the time of the making of the contract the Choctaw Company was engaged in the construction of a railway between Wister Junction and Hartshorne Stations, which are situated about 40 miles apart in the Indian Territory, and all but about three miles of the line was completed when the Steel Company tendered its rails, which were found to be entirely different from what had been ordered and could not possibly be used. They were, therefore, returned, and the Steel Company agreed to make others that would meet with the requirements.

The scene of the railway operations being miles away from any labor market, the Choctaw Company says that during this delay it was compelled to retain the workmen in its employ at an expense of $30,000, and that subsequently, when it became evident that the steel company could not make the quality of rail required, it was forced to forfeit its contract for the mail service with the United States Government. That by reason of the failure of the steel company to supply the rails it was deprived of the use of 40 miles of road, and being unable to obtain the engineer's certificate of the road's completion, which was pre-requisite and necessary under the terms of the mortgage upon the road to the issue of bonds, and when such bonds finally issued, after the delay occasioned by the steel company's non-compliance with the contract, the money market had so altered that the Choctaw Company was unable to market the securities and was forced into the hands of a receiver.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Mar. 1.

Statement of shipments of anthracite coal (approximated) for week ending February 16th, 1895, compared with the corresponding period last year:

Regions:	Feb. 16, 1895. Tons.	Feb. 17, 1894. Tons.	Difference.
Wyoming region	427,566	295,00	Inc. 132,566
Lehigh region	113,791	93,176	Inc. 20 615
Schuylkill region	214,345	189,039	Inc. 25,306
Totals	755,702	577,215	Inc. 178,487
Total for year to date	4,486,924	4,013,152	Inc 473,772

PRODUCTION OF BITUMINOUS COAL, in tons of 2,240 lbs., for week ending February 23d and year from January 1st:

Shipped East and North:	1895. Week.	1895. Year.	1894. Year.
Phila. & Erie R. R.	1,550	12,641	9,046
Cumberland, Md.	51,473	335,757	423,266
Barclay, Pa.	†	†	5,685
Broad Top, Pa.	9,821	63,196	54,815
Clearfield, Pa.	79,950	548,905	491,716
Allegheny, Pa.	38,375	256,808	203,813
Beech Creek, Pa.	47,715	401,748	402,400
Pocahontas Flat Top	‡62,900	‡464,375	‡360,125
Kanawha, W. Va.	135,075	482,918	389,223
Totals	422,859	2,568,318	2,341,389

† Returns not received.
‡ Week ending Feb. 16th.

Shipped West:	1895. Week.	1895. Year.	1894. Year.
Pittsburg, Pa.	38,725	300,948	200,793
Westmoreland, Pa.	35,825	272,594	227,376
Monongahela, Pa.	21,475	131,660	68,899
Totals	96,025	705,302	497,068
Grand totals.	518,884	3,273,620	2,838,457

Production of coke on line of Pennsylvania Railroad for the week ending February 23d, 1895, and year from January 1st, in tons of 2,000 lbs.: Week, 120,720 tons; year 873,883; to corresponding date in 1894, 478,843 tons.

Anthracite.

The anthracite coal trade shows no improvement The demand, which for this time of the year has been fairly active since the late "blizzard," has slacked off, and now producers are waiting for the blustering winds of March to enliven the trade.

The sales agents held a meeting on February 27th at the office of the Pennsylvania Coal Company, in this city. It was decided to restrict the March production to 60% of the maximum capacity, taking last June's output as the basis. The tonnage last June was 5,112,359 tons, so that the sales agents agree to mine only 3,067,415 tons this month. Prices were not changed. Nominally, the January circular (basis of $3.60 net on board for stove) continues to rule. Practically, the prices are to take care of themselves, as they have done these many weeks.

Some fault has been found with the sales agents for not "recommending" a more radical restriction, but after all, they did only what they could. Practically their decision amounted to this: Everybody may mine what he deems best, and sell at the best obtainable price.

The February output was to be but 40% of the June output, or 2,045,000 tons. To judge by the reports received, the actual shipments for the month are slightly in excess of 3,000,000 tons. Nevertheless, owing to the cold snap, coal has not accumulated as much as was feared. March is always a good coal-consuming month.

The advent of such weather as prevailed three weeks ago would cause a shortage of coal, since collieries would be forced to run on limited time and coal could not be moved promptly, so that to be prepared for such an emergency it is necessary to mine a fairly heavy tonnage. Considering that no one paid any attention to the sales agents' recommendations in February, it is more than foolish to blame them for not recommending a more radical restriction for March.

In the matter of prices the agents did well to leave them alone. To-day, dull as the trade is and light though the demand is, we find no cause to lower much the quotations for good, freshly mined coal, which we gave last week, namely: $3.25@$3.35 for stove; $3.15@$3.25 fore gg and chestnut and $3@$3.15 for broken, all net, on board. Some companies and individuals are short of stove and might hold out for $3.40, but others have abundant stocks and will sell for $3.25 or $3.30. The same holds good of chestnut and egg, so that our quotations are not too high nor too low.

We continue to hear of sales of "stock" coal at low prices. This week we heard of a sale by one of the companies of a lot of stove coal at $2.85 on board, which was alleged to be "stock" and decidedly off grade, but which, according to the testimony of an eye-witness, was as good as any white ash coal sold by the company. It is not easy to see why the company in question sold the coal at $2.85 when it is conceded that it could have disposed of it at $3. At any rate, the fact is established that prices are weak, and that the prospects of an improvement in the trade are far from encouraging.

It is a fact of the utmost significance that a great number of the anthracite interest express the opinion that a sharp and open but decisive fight is preferable to the present aimless drifting of the trade. Operations during February have shown that no company considers itself bound to adhere to any particular allotment or is acting in accordance with any particular policy formulated by the combined interest.

In other words, producers are apparently going on without any particular plan, and they are willing to continue to do so until something happens. What this something may be none of them can tell. Certainly there is not much expectation that the "Salvation Committee" will ever deserve the name with which it was christened in these columns. Several prominent officials of various companies say that a lingering death is infinitely worse than a quick one, especially since the latter would not be inflicted on all. It would be a survival of the fittest and the strong would then be able to dictate terms to the weak and a definte plan agreed upon, which the vanquished would have to accept nolens volens. The only difficulty just now, and it is a very natural one, seems to be in the classification of the victors and the victims. None of the companies has yet shown any inclination to benefit the trade at large by dying quickly and gracefully.

As matters stand now, open hostilities would not surprise us. When a fair proportion of the interests say, even though it be without the semblance of a threat, that a decisive war would not be unwelcome, it is because matters have gone to such a pass that some action must be taken promptly to prevent the eventual demoralization of the trade. Of course, so great an industry as the anthracite coal is cannot be wiped out. But if the annual reports of the coal carrying roads are to show figures which shall please the stockholders the companies must do something to improve their present condition. For the past three months the various companies have been trying to reach some amicable plan, some harmonious agreement which shall redound to the benefit of all concerned. Success has not crowned their efforts. The order of the day is therefore: Mutual concessions and forbearance or—open war.

Bituminous.

Only a small business is doing in the soft coal market at present, and shipments are slow. The lower ports have been closed up for some time now, and there is an accumulation of orders at the shipping ports, though not enough to cause any anxiety.

All the interest centers on the opening of the season and the booking of contracts for the year. One or two season contracts have been made during the week, notably the New York & New England Railroad, which, we understand, amounts to about 400,000 tons. It is reported that this contract was taken by a commission man at a very low price. The figure is said to be $2.45@$2.50, delivered.

Such figures would indicate that a great reduction must be made by the main line roads in their through rates from mine to tide. As yet producers have not been informed what these rates will be, and, although some hints may have been given, the prices named in the New York & New England contract partake of the nature of speculation. It is scarcely probable that the new rates will be as low as are necessarily presupposed by the above figures.

If prices for next season's business are to be as low as the New York and New England contract would imply some sort of an organization among producers would not surprise us. There is considerable talk of such a thing just now. It will not be based on the plans of the old Seaboard Steam Coal Association, which were too involved. Producers desire to include the main line roads, by means of which both shippers and shipments may be brought under better control.

All-rail business continues good. This part of the

trade does not seem to be so unfavorably affected by the prevailing depression as the tidewater trade. Transportation from mines to tide is good, since the volume of business is so small that the railroads can handle it with ease. On account of the ice blockades at the lower ports most of the coal is banked on arrival. The car supply is small. The railroads give "empties" to those producers only who have little coal standing at the shipping ports and who have vessel tonnage waiting. For the all-rail trade the car supply is ample for all requirements.

Ocean freight rates continue to be merely nominal, no charters having been made owing to the ice. To points beyond the Cape, the rate from all the ports is quoted nominally at $1, and to Sound ports, 90c. The ice is breaking away, and if the present mild weather continues it will not be long before the ports are all open.

Buffalo. Feb 28

(From Our Special Correspondent.)

Coal in good demand and market steady for anthracite. Bituminous in good request and unsettled quotations continue to rule.

The consumption of coal for several days has been large in consequence of the continued cold. The thermometer went up on Saturday morning, however, and since the weather has fluctuated, ending yesterday with a thaw.

The Buffalo Crystal Beach Steamboat & Ferry Company is in trouble, for Messrs. H. K. Wick & Co. have a judgment of $2,600 for coal supplied to the concern last summer. A warrant has been issued, and the steamers "Pearl" and "Gazelle" will be sold to satisfy the claim. There are other claims to settle, in all aggregating $55,000, or thereabouts.

The stocks of coal at Duluth are being rapidly depleted daily as trains of cars are transporting the fuel to west of St. Paul and Minneapolis. This movement has been going on for over a fortnight.

Ice on Lake Huron is reported to be 30 in. thick and as clear as crystal, as far out as the eye can reach.

There is much activity among the promoters of canal schemes in the United States and Canada. The principal ones are from Lake Michigan to the Mississippi, Lake Michigan to Lake Erie, Lake Superior to the Mississippi, Georgian Bay to Lake Ontario, Lake St. Clair to Lake Erie, and the enlargement of the St. Lawrence Canals so as to admit large seagoing ships, and from Lake Champlain to the Hudson river.

The Albany Senate and Assembly have passed the Clarkson bill, authorizing the expenditure of nine millions of dollars on the Erie, Oswego and Champlain canals, provided the people vote in favor thereof next fall. Bonds are to be issued, payable within a certain number of years. The Seymour plan is the one decided upon, giving 9 ft. of water on the Erie and Oswego and 7 ft. in the Champlain canals.

Chicago. Feb. 27.

(From our Special Correspondent.)

The selling of anthracite coal in the Chicago market remains in a fairly active condition. The coal trade has apparently been stimulated through the influence of the very cold weather (which is now a thing of the past in Chicago) as the selling of coal is of much larger proportions than before the cold wave set in. It is said that a good many shippers of coal are behind in filling orders, through the scarcity of cars. This fact in itself indicates that the dealers here are doing a lively business.

In the soft coal trade the conditions are about as reported for last week, the buying of coal being quiet. Enough coal is being disposed of to make a good week's business. Those who are not buying at the present time are not hanging fire from the fact that they have not had the opportunity to buy cannot be said to be doing so from the pecuniary motives, for coal has doubtless been offered them the past week at a price that is astonishingly low.

In both anthracite and bituminous coals the cutting is going on in a manner that bespeaks demoralization. This state of affairs has been brought about by the railroads, and the war among them remains as fierce as ever. There is no sign that a settlement will be made in any hurry. Soft coal shipments to Chicago are large, being a great deal more than is actually needed. Shipments of hard coal here through the want of cars is much behind for this season of the year.

Pittsburg. Feb. 28.

(From Our Special Correspondent.)

Coal.—The situation in the harbor and in the pools are the same as at date of last report. The weather has improved; the snow and ice is disappearing, with indications that the ice will not cause much, if any, damage. Price of pool and railroad coal show no change. There are but few barges loaded in the pools or in the harbor, while there are plenty of empties. It is not probable that any coal will be loaded until we have a rise and the ice moves off. The minor officials believe the old rates should be restored, and called the convention to have the condition discussed. The men will be urged to remain idle until the old rates are granted. The Guyandotte Coal Company, at Donlow, will start February 28th, after 18 months' idleness, with 250 men. The lumber mills at Guyandotte, Catlettsburg and Ceredo will all resume about March 1st, employing fully 3,000 men. Great coal mines go cheap.

Bowling Green, Ky., February 25th.—The one-time famous coal mines at Basket Station, Henderson County, idle for three years, were sold for $12,000. They were considered worth $100,000 four years ago. One hundred and fifty men will be put to work.

Connellsville Coke.—Cars are reported scarce during the past week, and shipments were considerably retarded. Notwithstanding this, the shipments were among the largest for some time. Owing to the blockade on the railroads, the loaded cars were sidetracked along the various lines, and empties could not be returned to the region in proper time on that account. For a portion of the time the Baltimore & Ohio and Pittsburgh & Lake Erie could not fill half the number ordered. The Pennsylvania Railroad was hard pressed, but in much better shape than the other two roads.

The increased production and shipments is very gratifying to the coke operators, but while the volume of business is up to expectations prices remain very low, and there is little prospect of an advance until rates in the iron and steel industry advance.

A summary of the region for the week shows 14,440 ovens in blast; estimated production of 145,783 tons; increase, 15,349 tons. The average time made by the plants in blast for the week was 585 days; increase, 76 days. Shipments to Pittsburg, 2,496 cars; to points East, 1,524 cars; to points West, 3,968 cars; total, 7,988 cars. Sales, 35,000 tons coke, next six months, $100 cash.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, March 1, 1895.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending Mar. 2. 1894		Mar. 1, 1895.		From Jan.,'94.	From Jan.,'95
	F'ces.	Tons.	F'ces.	Tons.	Tons.	Tons.
Anthracite.	27	13,904	35	21,601	126,576	192,476
Coke...	83	85,467	127	137,879	756,703	1,277,131
Charcoal...	18	3,852	19	4,268	34,786	42,772
Totals	128	103,223	181	163,151	918,065	1,512,079

There has been little worthy of note in the iron market during the past week. As shown by the letters from our correspondents, the movement in other cities is quiet, excepting in Pittsburg, where the purchase of a considerable block of Bessemer for time delivery has started rumors of various sorts. There is, however, in all markets a stronger tone, and prices are not shaded so much as for some weeks past. Further than this, the consumption of pig has now come to a point where stocks are being drawn upon to fill some orders. This means that the production is not so great as consumption, and, consequently, a better feeling is manifested in the trade.

Pig Iron.—There is little change to note in the condition of the market. Sales are for small amounts, but there is a better volume of business than last week. Quotations are as follows: Northern brands, No. 1X, $12@$12.50; No. 2X, $11@$12; gray forge, $10@$11; Southern irons, No. 1 foundry, $11.25@$11.50; No. 2 foundry, $10.25@$11.25; No. 1 soft, $10.50@$11; No. 2 soft, $10.25@$10.75

Spiegeleisen and Ferromanganese.—There has been no material movement in these products. A contract for 4,000 tons spiegel was placed by a steel works in the Cleveland, O., district, dividing the amount between two makers. Quotations at tidewater are: $20@$20.50 for 20% spiegeleisen, and $47@$48 for 80% ferromanganese.

Billets and Rods.—There has been very little business during the past week. Quotations at tidewater are as follows: Billets, $17.50@$17.75 and domestic wire rods, $23.50@$24.

Rails and Rail Fastenings.—There has been little movement in this market during this week. Rail quotations remain: Standard rails at tidewater, $22.75. In rail fastenings prices remain: Fish and angle plates, 1·10@1·20c. at mill; spikes, 1·40@1·60c.; bolts and square nuts, 1·80@2c.; hexagtonal nuts, 2@2·20c. delivered.

Structural Iron and Steel.—There has been very little business in this market. Quotations are Angles, 1·20@1·35c.; beams up to 15 in., 1·30@1·50c.; channels, 1·40@ 1·50c. on dock; tees, 1·45@1·60c. on dock.

Old Material.—There has been nothing in this market worthy of note. Some sales of old steel rails are reported at 50c. under quotations. Nominal quotations remain: Old steel rails, $9.50@$10; old iron tees, $10@$11 per ton; New York railroad scrap, $11.50@$12 per ton, delivered at mill, and yard scrap at $10; wrought turnings, delivered at mill, $8@$8.50; No. 1 wrought scrap at $9.50@$10.50 from yard, and machinery cast scrap $9@$10; old wrought tubes and pipe, $6.50@$7; old car wheel, $9.50@$10.50, New York; cast borings, $6@$6.50, delivered at mill.

Merchant Steel.—Business in this market has been light, but prices are fairly strong: Quotations are: Tool steel, 5·65@6·25c.; tire steel, 1·30@1·35c.; toe calk, 1·60@1·70c.; Bessemer machinery, 1·25@1·40c.; open-hearth machinery, 1·85@2c.; open-hearth carriage spring, 1·70@1·90c. crucible spring, 3·40@3·65c.; axles, scrap, 1·30@1·50c.; steel, 1·25@1·55c.; bars, common, 1·15@1·30c.; refined, 1·15@1·90c.; steel hoops, 1·45@1·60c. delivered; hooks and pins, 1·40@1·50c.; plates, flange, 1·50@1·65c.; firebox, 2@2·25c.; marine, 2·45@2·70c.; sheared, 1·80c.; shell, 1·40@1·50c.; tank, 1·20@1·40c.; universal mill, 1·25@1·40c. delivered.

Buffalo. Feb. 28.

(Special Report of Rogers, Brown & Co.)

Trade has jogged along at a comparatively slow rate during the past week, with only a few transactions of any size consummated in this immediate district, so far as we are able to learn, although west and east of here several orders of more than ordinary size have been on the carpet. We make no change in quotations, which are given below on the basis of cash f. o. b. cars, Buffalo: No. 1 foundry strong coke iron, Lake Superior ore, $11; No. 2 foundry strong coke iron, Lake Superior ore, $10.50; Ohio strong softener, No. 1, $11.10; Ohio strong softener, No. 2, $10.60; Jackson County silver, No. 1, $15.50; Lake Superior charcoal, $13.75; Southern soft, No. 1, $11, Southern soft, No. 2, $10.75; Hanging Rock charcoal, $18 50.

Chicago. Feb. 27.

(From our Special Correspondent.)

Rather a slight improvement is discernible in the iron market of this vicinity during the past week. The sales in a number of lines have apparently increased to some extent, but it is the amount of inquiries that has made the market a brighter one. The Illinois Steel Company expects to start up its Joliet works this week, the wage scale having been settled. Track elevation by the various railroads centering here is being taken up with vigor, the Northwestern, the Lake Shore and the Rock Island, are already at work, and others are now being figured on.

Pig Iron.—The pig iron market presents a better front than for some weeks past, presumably from the fact that the very cold weather having interfered with business for weeks past, consumers are at present making up for any loss of time. The sales of local iron during the week will foot up a very fair aggregate. Sales of carload to a couple of hundred tons were numerous, and one of 1,500 tons helped swell the weeks total. In Southern iron there has been a good run of orders, but at prices that are said to be very low. The Southern furnaces appear to be after business at any price. Prices are per gross ton f. o. b. Chicago: Lake Superior charcoal, $13@ $14; Lake Superior coke No. 1, $10.25@$10.50; No. 2, $10@$10.25; No. 3, $9.50@$9.75; Local Scotch No. 1, $10.50; No. 2, $10; Jackson County silveries, $14.50@$15; Southern coke, foundry, No. 1, $11@$11.25; No. 2, $10@$10.50; No. 3, $9.75@$10; Southern coke, soft, No. 1, $10@$10.50; No. 2, $9.75@$10; Southern car-wheel iron, $17.50@$18; Southern silveries No. 1, $11.25@$11.75; No. 2, $11.25; Tennessee charcoal No. 2, $14@$14.50; Bessemer, $10.50@$11; Ohio strong softeners, $13.

Structural Material.—A moderate amount of business is being transacted, and there are some very good contracts being figured on. The track elevation of the various railroads will require a considerable amount of bridge material. Quotations are f. o. b. Chicago: Angles, 1·45@1·50c.; tees, 1·50c. @1·60c; universal plates, 1·45c.; beams and channels, 1·50c.

Plates.—As stated a few issues ago, the Illinois Steel Company would soon have their playe mill at South Chicago in operation. It is said that March 15th the mill will start up. Business is only fair, and small lots the only demand. Prices are: Flange steel, 1·65@1·75c.; fire-box steel 1·95@1·50c.; tank steel, 1·40@1·50c.; boiler tubes, 70 to 75% discount.

Merchant Steel.—Trade continues well, some good sized orders coming in. The conditions are good for future sales. Prices are: Carload lots: machinery, 1·60@1·70c.; tire steel, 1·50@1·60c.; Bessemer bars, 1·35@1·45c.; toe calks, 2·10@2·20c.; crucible spring, 3·40@3·65c.; tool steel, 5½@6½c.; specials, 10·50@11·50c.

Galvanized Sheets.—Business has improved at the mills and trade from store is a trifle more active. Prices are 75 and 10% discount.

Black Sheet Iron.—Inquiry on future delivery is good, but actual sales are not numerous. No. 27 common is selling 2·40@2·45c.

Bar Iron.—The week has been a fair one through the number of sales of small quantities placed, but the larger buyers keep seemingly out of the market for the coming of lower prices. Prices on common iron remain at 1@1·05c. and refined 1·15@1·20c.

Billets.—The week has not shown up as well as its predecessors, as the aggregate of sales foot up about half of it. Prices remain $16 50.

Steel Rails.—Sales still remain few, and the aggregate small, the larger consumers not yet appearing. Rails are selling at $23.

Old Rails and Wheels.—There has been no sales of either old iron rails or wheels in this market the past week. Quotations on old iron rails is $10.50. Old wheels are $8.50.

Scrap.—There is no improvement in scrap. Quotations are: Forge, $8.50@$9; cast iron borings, $3.50; wrought iron turnings, $4@$4 50; axle turnings, $6.50; mixed steel, $5.50; tires, $15.50@$13; iron axles, $13.

Pittsburg. Feb. 28.

(From Our Special Correspondent.)

Raw Iron and Steel.—Trade continues to move along steadily. Furnaces at points adjacent to this city are kept busily engaged on orders booked for present and future delivery. The volume of sales are very satisfactory; at the same time prices fall far short of what they ought to be. From the general movement at most leading centers, it is very evident that considerable preparations are being

made for an extensive spring and summer trade; the sales of Bessemer pig alone from January 1st to February 22d amounts to 176,950 tons. This fact will furnish the reader with a faint idea of the enormous consumption of Bessemer, and also of the magnitude of the iron and steel trade of this city. The belief is becoming pretty general that prices have reached that point that it is useless to talk about concessions. Stocks of raw material in first hands and at furnaces is not large, hence the principal portion are made for delivery March, April, May. Last weeks' transactions of 45,000 tons of Bessemer showed very conclusively that no lower figures was expected, particularly as about 30,000 tons were sold to a Pittsburgh firm who are large makers; parties interested should bear these facts in mind, as prices of Bessemer, steel billets, gray forge and foundry irons rule lower here than at any northern point. The transactions in the eastern markets were few in number and for moderate amounts of material; buyers of pig iron in the local market who are not wedded to any particular brand of iron find little difficulty in securing what material they require upon extremely favorable terms, and especially if the order calls for an amount to cover their requirements for some time. In the case of city furnaces or well-known standard brands prices are firmly maintained, and most of the furnaces have business in hand to absorb their products well into the summer. The heavy output of pig iron throughout the country, which, coupled with the fact that the demand is not equal to the supply, operates to keep values at their present low level and encourages buyers to continue purchasing limited amounts.

The buying of Bessemer iron during the last 10 days has been very heavy, as fully 85,000 tons has changed hands at prices from $9.90 to $10.15, deliverable at Pittsburgh, showing an advance of only 25c. per ton. The steel market during the same time shows no improvement; in fact, some steel was sold this week at prices ruling when Bessemer iron was selling at $9.75@$9.85, Pittsburgh. The outlook for steel at the present time is very poor, as the purchase of the above tonnage of metal shows no improvement in steel billets, and Bessemer iron at prices named above cannot be made into steel at present selling price without loss to the steel plant. Bessemer metal will have to go down or steel billets advance, and with the present demand for steel, no advance is likely.

Tons.	COKE SMELTED LAKE AND NATIVE ORE.	Cash.
10,000	Bessemer, April, May, June	$10 00
10,000	Bessemer, Mar., April	9 95
5,000	Bessemer, Mar., April, May	10.00
5,000	Bessemer, Mar., April	10.00
3,000	Bessemer, Mar., April	9.90
3,000	Bessemer, Mar., April	10 15
3,000	Bessemer, Mar., April, May	10.15
2,000	Bessemer, Mar., April	10.15
1,000	Bessemer, Mar., April	10.15
1,000	Gray Forge, Mar., April	9.40
1,000	Bessemer, next two months	10.15
1,000	Bessemer, next two months	10.10
1,000	Bessemer, next two months	10 05
750	Gray Forge, next two months	9 15
300	No. 1 Foundry	11.00
200	No. 2 Foundry	10.25
100	No. 3 Foundry	9.75
	CHARCOAL.	
150	Cold Blast	22.75
100	No. 2 Foundry	15.75
100	Cold Blast	22.50
50	No. 2 Foundry	16 00
50	Cold Blast	22.80
25	Extra	27.50
	BLOOMS, BILLETS AND SLABS.	
3,000	Billets, March, April, at mill	15.15
2,000	Billets, March, April, at mill	15.15
2,000	Billets, March, April, at mill	15 00
1,500	Billets, March, April, May, at mill	15.15
1,000	Billets, March, April, at mill	15.15
500	Billets, March, at mill	15.00
	SKELP IRON.	
1,000	Wide gr'v'd 1.15	4 m.
700	Sheared 1.27½	4 m.
500	Wide gr'v'd 1.17½	4 m.
500	Nar'w gr'v'd 1.17½	4 m.
	SKELP STEEL.	
810	Sheared 1.15	4 m.
800	Wide gr'v'd 1.00	4 m.
500	Nar w gr'v'd 1.00	4 m.
	MUCK BAR.	
500	Neutral	$18.00
250	Neutral, delivered	18 00
100	Neutral	18.00
	SPELTER.	
100	Prime Western	3.12½
	STEEL WIRE RODS.	
2,000	5 gauge, at mill	$21.40
	SHEET BARS.	
300	At Maker's mill	$20.00
	BLOOMS, BILLETS, BAR ENDS.	
600	Bloom and billet ends delivered	$9.80
	FERRO MANGANESE.	
200, 80%	delivered	$17.00
	OLD RAILS.	
750	Iron rails	$12.00
700	Steel rails	9.75
150	Iron rails	12 25
	SCRAP MATERIAL.	
600	No. 1 Railroad wrought scrap, net	$10.00
450	Short wrought, net	9.50
300	Old car wheels, gross	8.70
200	Wrought turnings, gross	7.50
200	Wrought scrap, gross	8.75

Philadelphia. March 1.

(From Our Special Correspondent.)

Pig Iron.—The eastern Pennsylvania iron market is dull. Rumors of big sales elsewhere have had no effect. Consumers have been called upon within a day or two, but they refuse to increase orders or anticipate requirements. Bessemer is being watched. Mill men do not fear any advance in forge, they say. No. 1 Foundry is selling in its usual retail way at $12.25@$12.50. Several fair sized lots of No. 2 were taken at $11. Brokers are on the alert and predict a sudden demand, but the facts do not seem to warrant it.

Steel Billets.—Buyers are indifferent, having enough stock to see them along a little while. Brokers are warning them that the western markets are improving. Price, $17.50.

Merchant Iron.—Small orders are more plentiful, but the increase is unimportant. Storekeepers have a better trade. The mill men here are all hopeful of a good spring. Orders are taken at $1.15 at mill.

Rails.—Both wire and cut are doing middling well.

Skelp manufacturers have added a few small orders at $1.20.

Sheets.—This is the active season for sheet iron and a fair amount of business of a retail nature is being done, but no prices are given. Heavy plates are oftener called for than light.

Merchant Steel.—Wagon and carriage work is taking a good deal of steel, but buyers will not take more than enough to see them through work on hand.

Plate.—The plate iron makers have gathered up a few orders, most of them under 100 tons, at $1.25 for heavy plate. Tank steel, $1.25; inquiries are encouraging.

Structural Material.—A 1,000 ton order went to a local mill for city delivery. Quite a number of small orders were placed, and more are coming. Agents are not inclined to promise much, but think very short time will bring big orders.

Steel Rails.—Quoted at $22, the street talk is that some big rail orders are soon to be placed but those who ought to and perhaps do know decline to give any information.

Old Rails.—Quiet at $11.75.

METAL MARKET.

NEW YORK, Friday Evening, March 1, 1895.

Gold and Silver.

Prices of Silver per Ounce Troy.

February.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. to $1.	February.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in $1
23	4.88¾	27 5/16	61	.464	27	4.88¾	27 1/16	60⅜	.467
25	4.88⅝	27 5/16	60¾	.466	28	4.88¾	27 1/16	60¾	.466
26	4.88½	27 1/16	60⅜	.467	1	4.88¾	27 1/16	60⅜	.467

Silver has been in moderate supply and has been easily placed at current rates. Some sentimental feeling in favor of silver has been developed by the action of the German and English Parliaments in reference to the Monetary Council. Prices, however, have not yet responded to the feeling, as all action of a legislative character is problematic.

The United States Assay Office at New York reports the total receipts of silver at 184,000 oz. for the week.

Gold and Silver Exports and Imports.

At all United States Ports, January, 1895, and Years 1895 and 1894:

	Gold.		Silver.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Jan.	$26,295,260	$1,259,269	$3,755,501	$1,248,906	E. $27,452,586
1895..	26,295,260	1,259,269	3,755,501	1,248,906	E. 27,452,586
1894..	1,273,157	765,641	1,811,999	911,151	E. 1,304,648

The statement includes all United States ports, the figures being furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York

For the week ending February 23d, 1895, and for Years from January 1st, 1895, 1894, 1893 and 1892:

	Gold.		Silver.		Total Excess. Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
We'k	$107,985	$1,272,805	$198,102	$2,582	I. $675,300
1895..	25,800,573	2,033,661	4,463,454	194,041	E. 28,214,370
1894..	2,742,058	1,746,730	7,577,181	245,158	E. 8,327,54
1893..	25,852,568	553,789	4,573,339	515,156	E. 29,356,962
1892..	5,456,348	2,516,652	4,177,139	251,024	E. 6,837,801

The gold exported for the week went to the West Indies; the silver nearly all to London. Of the gold imported, $1,219,600 came from London, the balance from Germany and South America; the silver came from Central America.

During the five days ending February 28th the imports and exports of gold and silver, including gold and silver ore, from the port of New York were as follows: Imports, gold, $1,920,233; silver, $23,823. Exports, gold, $45,000; silver, $609,480. All the gold exported was in American coin and went to the West Indies. Of the silver exported $17,280 was in foreign coin and went to the West Indies; the remaining $592,200 was in American coin and bullion, all of which went to London.

FINANCIAL NOTES OF THE WEEK.

The event most anxiously looked for during the week just closing was the allotment of the bonds for the new loan which was made on Tuesday. No particulars have been given out by the syndicate, however, and the facts learned so far have been entirely by private inquiry. As far as we are able to state, applicants on this side of the water were allotted from 5 to 15% of the amount of their bids, and apparently the syndicate has exercised a good deal of discrimination; and decided preferences have been given to bidders who were not suspected of any intention to draw gold from the treasury, but were in position to supply it from other sources.

In London the allotments have been over from 5 to 10% on the bids, the total amount of which in fact covered the remainder nearly 15 times. It is probable that at least three-fourths, perhaps nearer four-fifths, of the entire loan will be placed with the London market.

The syndicate has continued to turn gold into the Treasury, and the amount, as will be seen by our usual weekly statement below, has risen to about $82,000,000; a further addition is expected on the arrival of the steamers to-morrow. The exact amount of gold shipped from London and Paris cannot be ascertained. The largest single shipment noted this week is of $1,750,000 from Liverpool; other and smaller amounts are on the way.

The exchange rates have fluctuated somewhat uncertainly, and on Thursday were a little over the usual gold export point. There were reports that some gold would be sent out, but that proved to be untrue, and no shipments of any amount are reported. From our table at the head of this column, it will be noted that last week, for the first time in many months, the imports of gold and silver largely exceeded the exports.

As we noted last week, there has been no reason to expect any currency legislation from the present Congress, and knowing that there remain but two working days of the session, that prediction has become a certainty, the time remaining being barely sufficient to pass the necessary appropriation bills. There is a possibility, but not a probability, that in the hurry of the closing moments some motions like Senator Gormon's plan for issuing short-time certificates, or some one of the other measures which have been proposed may be tacked on to an appropriation bill. If so, it is more likely to be a mischievious than a useful operation upon the whole. However, we may conclude that the financial question will be left in the hands of the President until the meeting of the next Congress.

Perhaps the most important event that we have to record this week is the acceptance by the British House of Commerce of a resolution approving the holding of a new monetary conference as proposed by Germany. Some remarks on this new conference will be found on our editorial page. With the approval of Germany, Austria, Great Britain and the United States, and the probability that France also will join, the conference may be said to be assured.

We may add that a resolution has passed the Senate, and will probably pass the House, authorizing the President to send delegates to such a conference. The resolution proposed nine delegates, three of whom are to be senators, three representatives, and the remaining three to be appointed by the President.

The statement of the United States Treasury on February 28th shows balances in excess of outstanding certificates as below, comparison being made with the corresponding day of last week:

	Feb. 21.	Feb. 28.	Changes.	
Gold	$81,203,121	$83,948,762	I.	$2,645,641
Silver	15,452,998	15,848,415	I.	390,417
Legal tenders	48,983,853	47,355,316	D.	1,628,547
Treasury notes, etc.	35,742,659	36,369,337	I.	626 7 8
Total	$161,442,611	$183,516,830	I.	$22,074,239

Government deposits with national banks on the same date amounted to $15,158,130, a decrease of $191,110 during the week.

The receipts of the United States Treasury for the week ending February 23d for three years past were as follows:

	1893.	1894.	1895.
Customs	$3,739,829	$2,371,277	$2,492,587
Internal revenue	2,693,770	2,675,190	1,869,748
Miscellaneous	138,507	1,009,904	102,206
Total	$6,473,056	$6,056,371	$4,464,541

The receipts for the week this year show a decrease from the preceding week of $1,399,489, chiefly due to the holiday occurring during the week, which, coming on Friday, practically took two business days out of the week. Expenditures for the week were $3,031,000 for civil, war, navy and Indian expenses, $2,898,000 for pensions and $46,229 for interest; total, $4,975,229. The week's excess of expenditures was therefore $510,688.

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, $150,709,280. Against these are held in the Treasury 26,558,894 coined standard silver dollars and silver bullion purchased at a cost of $124,151,981, making a total of $150,710,875.

The statement of the New York banks for the week ending February 23d shows increases of $2,376,000 in legal tenders and $287,900 in circulation; decreases of $3,690,700 in surplus reserve, $766,500 in loans, $6,986,000 in specie, and $3,674,800 in deposits. The total reserve reported was $161,962,700, being $29,823,025 in excess of legal requirements. Most of the changes are probably due to anticipation of the new bond issue, though they are somewhat difficult to understand owing to the different dispositions made by the various banks of amounts deposited on account of bids for bonds.

The imports of specie by water at San Francisco, for January, were as follows:

	Gold.	Silver.	Total.
Mexico	$34,136	$97,736	$131,872
British Columbia	17,162	.....	17,162
Australia	852	.....	852
Central America	25,000	.....	25,000
Japan	1,000	2,570	3,570
Society Islands	507	.....	507
	$78,557	$100,236	$178,793

The total imports show a decrease of $158,322, as compared with those for January of last year.

The Bank of England on Thursday, February 28th, reported its total gold holdings at £37,084,603, an increase of £7,054,079 over the corresponding date last year. The Bank shows a net decrease of £148,000 in gold for the week due to unusual heavy exports. The shipments to the United States, though considerable, were not drawn from the Bank, but from outside sources, but there were large exports to the Argentine Republic, chiefly to pay for wheat. Some gold, it is expected, will have to be shipped in connection with the new Brazilian loan. The Bank shows in accordance with this statement a decrease in reserve, the proportion of reserve to liability being 63·65% against 70·69% last week, and 56·63 a year ago.

The Bank of France on Thursday, February 28th, reported its coin and bullion holdings at 2,148,577,800 francs gold, and 1,248,750 francs silver, an increase of 435,943,452 francs gold, and a decrease of 19,049,304 francs silver, as compared with the corresponding date last year. Changes for the week were a decrease of 1,925,000 francs gold, and an increase of 800,000 francs silver. The week is notable for the fact that it is the first in nearly three years in which the bank has shown any decrease in gold. It is not probable, however, that this movement will continue, or that the loss in gold signifies anything more than a temporary withdrawal of balances.

For convenience of comparison, we have grouped together in the table below the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced in dollars, and comparison is made with the holdings at the corresp onding dates last year:

	Gold.	Silver.	Total.
Asso. Banks of New York	.....	.....	$71,136,700
1894	.....	.....	97,915,630
Bank of England	$185,423,015	.....	185,423,015
1894	150,152,620	.....	150,152,620
Bank of France	429,715,560	$249,750,000	679,465,560
1894	342,525,870	253,559,860	596,086,730
Imp. Bank of Germany	.....	.....	277,670,000
1894	.....	.....	229,670,000
Austro-Hungarian Bank	85,455,000	68,942,000	154,397,000
1894	51,255,000	81,172,000	132,427,000
Netherlands Bank	22,129,000	34,819,000	56,948,000
1894	21,393,000	35,091,000	56,484,000
Belgian National Bank	.....	.....	25,575,000
1894	.....	.....	23,115,000
Bank of Spain	40,021,000	58,197,000	98,218,000
1894	39,590,000	36,554,000	76,144,000
Imp. Bank of Russia	214,032,000	112,761,600	323,793,600
1894	.....	.....	.....

The return for the Associated Banks of New York is of date February 23d; all the others are of date February 28th, except the Bank of Russia, whose return is dated December 12th-24th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports its gold only, not considering silver at all. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

Shipments of silver from London to the East for the year to February 15th are reported by Messrs. Pixley & Abell's circular as below:

	1894.	1895.	Changes.
India	£1,050,030	£884,130	D. £165,900
China	207,500	592,900	I. 385,400
The Straits	76,900	104,300	I. 27,400
Japan	20,000	105,000	I. 85,000
Total	£1 354,430	£1,486,330	I. £131,900

Shipments for the week were £25,350 to India; £155,500 to China, and £20,000 to Japan, all bar silver; £37,700 in Mexican dollars to the Straits. Arrivals for the week were £2,000 from Natal, and £139,000 from New York all bar silver.

Indian Exchange was fairly active this week and the 60 lakhs of Council bills offered in London were all taken at very nearly the same average as last week, that is, 12¾d. per rupee. The tendency to a further fall in exchange seems to have been checked, partly by the strength of the silver market, and partly, also, by the fact that business in India is improving somewhat. The Indian banks have generally raised their discount rates and a better demand for money is reported. The continued low price of the rupee is again bringing out the gold which the owners have apparently hesitated to put upon the bazaars, owing to the uncertainty as to the price of silver. The gold exports from India in the last week in January rose to nearly $500,000, and this amount will probably be exceeded in February.

A remarkable feature of the exchange market for some time past has been, that in spite of the ruling low rates for Council bills and commercial exchange on India, and in spite also of the fluctuations in the London prices of silver the dollar and tael rates have been remarkably steady, having shown but little variation for nearly three months past. The effect of the Japan-China war on these rates has been very much less than was anticipated.

The returns of foreign commerce of Austria-Hungary for the full year are as follows:

	1893.	1894.	Changes.
Exports	Fl. 895,800,000	Fl. 804,520,000	D. Fl. 1,280,000
Imports	670,400,000	717,500,000	I. 47,100,000
Excess, exports.	125,760,000	87,020,000	D. 48,680 000

The excess of exports over imports in 1894 was less than that shown in any year since 1884.

Germany has begun negotiations with Japan for a new commercial treaty. The government has asked for information bearing on the question of trade with Japan from the Chambers of Commerce of all the leading ports. In 1894 the German exports to Japan were valued at about $4.500,000, and strong efforts are being made to increase this trade.

The new Austrian gold loan, to which reference has heretofore been made, is for 50,000,000 florins at 4% interest, the amount being equivalent to about $25,000,000. It is taken by a syndicate of bankers, headed by the Rothschilds, at par. The previous gold loans, made in 1893, were taken at 95¼ and 97, so that the present loan shows a distinct advance. Under the currency reform law, providing for the return to specie payments, the government has authority to borrow 40,000,000 fl. more; in addition to the present loan; but is believed that this issue will provide all the gold needed, without any further borrowing. There has been some criticism of the operation, on the ground that the loan might have been placed at 3½, but upon the whole the terms made seem fair enough. The gold needed has nearly all been provided, and no special draft on London is expected. Although all provisions have been made, the Austrian Government is proceeding very slowly and no date has yet been set for resumption.

As showing the demand for government securities in Europe, the following comparisons of prices in February of the three years named will be of interest; the quotations are on the Berlin Bourse:

	1890.	1892.	1894.	1895.
German 3% loan	87·40	88·60	95·75	97 90
Austrian 4% gold loan	96·00	94·50	102·25	103·50
Hungarian 4% loan	92·70	96 50	101·75	102 75
Russian 4% consolidated	99 00	98 30	103·00	103·50

During the six years from 1890 to 1895, however, Italian 4% stock fell from 96 30 to 85·75, the fall being due to the special financial troubles of Italy. Mexican 6% bonds were carried down from 94·10 to 78 00 by the fall in silver.

The foreign merchandise trade of Canada for the six months ending December 31st was as follows:

	1893.	1894.
Exports	$77,614,390	$72,539,132
Imports	54,572,395	60,891,062
Excess, Exports	$23,031,995	$11,705,670

The decrease in exports was chiefly in lumber. The gold and silver movement for the half-year was as follows:

	1893.	1894.
Imports	$2,905,757	$3,561 906
Exports	844,824	1,093,363
Net imports	$2,060,933	$2,468,543

Nearly $2,500.000 of coin and bullion were, therefore, added to the stock in Canada during the latter half of 1894.

The mint at Sydney, New South Wales, in 1894 received 869,782 oz of gold for coinage purposes. Of this quantity 579,300 oz. came from Queensland, New South Wales being next with 222,988 oz., and New Zealand third with 44.855 oz. Countries other than Australia sent 4,894 oz., but the quantity received from Victoria, Tasmania and South Australia was small. The total number of sovereigns coined was 3,067,000, and the value of silver coin issued was £6,300, that of bronze coin being £505. The worn silver coin withdrawn from circulation represented £4,678. The total earnings of the Sydney mint for the year amounted to £16,656.

Domestic and Foreign Coins.

The following are the latest market quotations for the leading foreign coins:

	Bid.	Asked.
Mexican dollars	$0.49	$0.50
Peruvian soles and Chilean pesos	.48	.49
Victoria sovereigns	4.87	4.89
Twenty francs	3.88	3.92
Twenty marks	4.75	4.80
Spanish 25 pesetas	4.85	4.89

Other Metals.

Copper.—The market has been rather unsettled and lower values have been accepted. Advices from abroad are to the effect that American copper was pressed for sale, both Lake and electrolytic sorts, at rather lower prices than established here, and some of the Lake companies, showing more desire to meet buyers, have accepted somewhat lower prices for later delivery. Prices for spot copper have been upheld at 9⅝ but for delivery after the opening of navigation, business was done in fair quantities at 9¼. With the low quotations for copper from the other side, there is, however, not much desire to operate largely on this basis. For electrolytic copper we have to lower quotations to 9⅜@9½, and for casting copper to 9¼@9¼. Manufacturers appear to be fairly busy, but they are acting very cautiously as regards purchasing raw material.

Abroad the market has been rather dull. Prices of g. m. b.'s show a marked decline, values having receded to £38 17s. 6d.@£39, and 7s. 6d. higher for three months' prompt. The fact that American sorts were more freely offered has had a depressing influence, and these sorts as well as best selected were traded on somewhat easier terms. Deliveries were good, and the statistics for the second half of February show a decline of 900 tons. Values for refined and manufactured are somewhat irregular, and we therefore omit quotations to-day

Copper Exports.—The exports of copper from the port of New York during the week ending February 28th, 1895, as reported by the New York Metal Exchange, were as follows:

Copper:		
Rotterdam—Maasdam	Plates	112 tons.
" Obdam	"	128 "
Hamburg—Dania	Ingots	10 "
" Scandia	Cakes	5 "
Dantzic—Francisco	Bars	1 "
Liverpool—Cevic	Pigs	83 "
Mexico—City of Para	Ingots	10 "
Havre—La Gascogne	Ingots	50 "
" "	Pigs	67 "
" "	Bars	50 "
Antwerp—Westernland	Cakes	5 "
Matte:		
Swansea—Llandaff City		90 tons.
" Massasoit		20 "
Hamburg—Scandia		36 "
Havre—La Bourgogne		152 "

Exports of copper from Baltimore for the week ending February 28th are reported by our special correspondent as follows:

Hamburg—Polaria	202 cakes	29,435 lbs.

This makes 526 long tons of copper and 308 tons of matte from New York, and 13 tons of copper from Baltimore, a total of 539 tons of copper, and 308 tons of matte.

Imports and Exports of Metals.—Imports of metals into this port for the week ending February 20th are reported by the New York Metal Exchange as follows: 530 tons and 53,860 boxes tin and black plates from the United Kingdom: 500 tons Belgian lead, duty paid, from Antwerp; 45 tons type metal and 1,370 lbs. aluminum from Bremen; 80 casks antimony from Hamburg.

Exports of metals (other than copper) from this port for the week ending February 20th are reported by the New York Metal Exchange as follows: 34 tons scrap iron to Glasgow; 251 tons sulphate of copper to Italy.

Arrivals at the port of Baltimore for the week ending February 21st were 2,057 tons iron pyrites from Spain; 177 tons pig iron from Hamburg; 21,530 boxes tin plates from the United Kingdom.

Arrivals at the port of Philadelphia for the week ending February 21st were 3,630 tons iron ore from Cuba; 4,200 boxes tin plates from the United Kingdom.

Exports of metals (other than copper) from the port of Baltimore for the week ending February 28th are reported by our special correspondent as follows: 578 barrels sulphate of copper, 315,150 lbs. to Germany.

Tin.—There has been a good consumptive demand, which was freely met by importers, and a good business has been doing in spot at 13.10@13.20, and futures at 12.90@13.05. At the close the market is rather steadier.

In London prices opened lower early in the week, and fair transactions took place at £60; but afterwards the tendency hardened somewhat, and the market closes steady at £60 5s. for spot and £60 15s. for three months.

Lead has been pressed from second hands, and sales of moderate quantities took place at 3·10@3·07½. At these figures first hands have refused to sell, and it is expected that with the warmer weather a larger demand will be forthcoming.

The foreign market has been rather dull, business there being still interrupted by the difficulty of effecting shipment on account of ice. Values have been fairly sustained, and Spanish lead is quoted at £9 11s. 3d.@£9 12s. 6d., and English lead £9 13s. 9d.@£9 15s.

St. Louis Lead Market.—The John Whal Commission Company telegraphs us as follows: Lead dull with free sellers at 2·90c., and not very many buyers at that figure.

Spelter.—In spite of the high prices which are now being paid for ore, the refined metal has shown little life, there being a slight demand and consumers find it easy to cover their wants in view of the stocks accumulated at the smelters' works. We quote nominally 3·20@3·25, delivered New York.

The London market is flat, with sellers of good ordinaries at £13 15s. and specials at £13 17s. 6d.

Antimony remains rather dull; Cookson's at 8c. and Hallett's at 7¼c.

Quicksilver.—There is no change in this market. Quotations are: New York, $36; London, second hands, £6 8s. 6d; Rothschilds's, £6 10s.

Aluminum.—Current quotations are unchanged as follows. No. 1 being over 98% pure metal, and No. 2 over 94% pure; No. 1 in rolling ingots, 63c. per lb. for small lots at factory, 60c. in 100 lb. lots, 58c. in ton lots. No. 1 in ingots for remelting, 60c. for small lots, 55c. for 100 lb. lots, and 53c. in ton lots. No. 2 in ingots for remelting, 55c., 85c. and

50c. per lb., according to size of order. Sheets, 80c. @$4.40 per lb., according to size and thickness. Wire, $1@$2.50 per lb., according to gauge. Castings, 90c. per lb. up, according to number, weight, patterns, etc. Tubes, from 20c. to $3.15 per foot, according to thickness and diameter.

Abroad quotations for 99% pure metal in Paris are 5 fr. per kilo. for ingots; 6 fr. and upward for sheets; 10 fr. for wire over 0·5 mm. and 15 fr. up for tubes. The Neuhausen Company quotes No. 1 at 5 fr. per kilo. for ingots in small lots at the works in Switzerland, and this practically fixes the price; a considerable reduction is made on large orders.

Bismuth.—Quotations are nominal at $2.00@$2.50 per lb., according to quantity, with no sales reported.

Magnesium.—No regular quotations are to be found for this metal in New York, where sales are usually made in small lots for special purposes only, and on private terms. Prices in Germany are, for lots of over 10 kilos.: Ingots, $6.75 per kilo.; bars, $6.50; powder, $9; ribbon and wire, $9.50. For orders of less than 10 kilos., 25 cents per kilo. must be added for ingots or bars, and 50 cents for ribbon, wire or powder. These prices are delivered at works; the Aluminum and Magnesium Fabrik, Hemelingen, Germany, is the only maker of the metal in commercial quantities.

Nickel.—Recent sales reported are all on private terms. Quotations are nominal at 36@39c. London quotations are 15½@17d. per lb., and less firm than for some time past. In Paris no change is reported; pure metal is quoted at 5 fr. per kilo., equal to about 43½c. per lb. Copper-nickel alloy, 50% nickel, 2·75@3 fr. per kilo. These are list prices, and are said to be shaded considerably for large orders.

Phosphorus.—Quotations are steady at 50@52½c. f. o. b., New York or Philadelphia.

Platinum.—Some scarcity of this metal is reported, and prices are firm.

For chemical ware, hammered metal, Messrs. Eimer & Amend, New York, quote cruicibles and dishes 41c. per gram for orders of over 250 grams; 43c. for orders of 100 grams or over, and 45c. for small lots. Wire and foil are 40c., 41c. and 42c. per gram, respectively, for orders of the quantities named. Current retail prices for crucibles are 50c. per gram.

Sodium.—In England and Germany makers quote 90@96c. per lb, according to quantity. Sales in this market are too small to furnish quotations.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, March 1, 1895.

Heavy Chemicals.—Dealers report an improved inquiry for future delivery, although actual sales have not been very heavy. For caustic soda prices are firmer for both spot and futures, owing to the light arrivals and the increased demand. Alkali has been in better request and several sales are reported at unchanged prices. Carbonated soda ash continues quiet though in rather better demand. A fair business continues to be done in bleaching powder. We quote this week: Caustic soda, 60%, 2·10@2·20c. for spot; futures 2c. and upward; 70 to 74%, 2·05@2·30c. Carbonated soda ash, 48%, is ·90c.@1c., according to quantity and delivery; small parcels range higher. Alkali, 48%, is ·90@1c., with special makes at 1@1·05c. Bicarb. is 1·80@2c. for spot. Bleaching powder is 1·80@1·90c. Sal soda, 65@75c.

Acids.—We must continue to report a quiet acid market. Only a few contracts for delivery through the year have been made. The jobbing demand is only fair. We quote per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acids, acetic, $1.40@$1.65 (in barrels). Muriatic, 18°, 80@90c.; 20°, 90c.@$1.15; citric, 36°, $3.25@$4; 40°, $4@$4.50; 42°, $4.50@$5.25. Mixed acids according to mixture: oxalic, $7@$7.50. Sulphuric, 60°, 60@70c.; 66°, 70@85c. Blue vitriol is quoted at $3.25@$3.50.

Brimstone.—Quotations for best unmixed seconds are $16.25@$16.50 for spot and to arrive, near due, and $15.50@$15.75 for shipments. Best thirds are $1 less.

Fertilizing Chemicals.—The market continues quiet, with prices practically unchanged. A few sales are reported at the ruling figures. Our quotations are as follows: Sulphate of ammonia, gas liquor spot, $3 12½@$3.15; prompt shipments, $3.10; bone, $3@$3.05. Dried blood, high grade, $2.05@$2.10; low grade, $2@$2.05 per unit. Azotine, $2.10. Concentrated phosphate (30% available phosphoric acid), 75c. per unit. Acid phosphate, 13% to 15%, av. P_2O_5, 57c. per unit at seller's works in bulk. Dissolved bone black, 17% to 18%, P_2O_5, 90c. per unit. Acidulated fish scrap, $12, and dried scrap with few or no sales, nominally $21 f. o. b. fish factory. Tankage, high grade, $21@$21.50; low grade, $20. Bone tankage, $22; ground bone, $20. Bone meal, $23@$24.

In lots of 50 tons on contracts we quote, per 100 lbs.: Double manure salts, 48-53% (basis of 48%): New York, Boston and Montreal, $1.10; Philadelphia and Norfolk, $1.12½; Charleston, Savannah, Wilmington, N. C., and New Orleans, $1.15. Sulphate of potash, 90%, and minimum, 96% respectively (basis of 90%): New York, Boston and Montreal, $2.05@$2.09; Philadelphia and Norfolk, $2.07½@$2.11½; Charleston, Savannah, Wilmington, N. C., and New Orleans, $2.10@$2.14.

Muriate of Potash.—Quotations for lots of 50 tons are as follows: 80-85% and minimum 95%, respectively (basis of 80%): New York, Boston and Montreal, $1.75@$1.78; Philadelphia and Norfolk, $1.77½@$1.80½; Charleston, Savannah, Wilmington, N. C., and New Orleans, $1.80@$1.83.

Kainit.—Prices for kainit (minimum 23%) are as follows for invoice and actual weights respectively: New York, Boston and Philadelphia, $8.55@$8.80; Norfolk, $8.90@$9.15; Charleston, Savannah, Wilmington, N. C., and New Orleans, $9.30@$9.55.

Nitrate of Soda.—We quote $1.97½@$2.00 for spot and $1.75@$1.80 for future shipments.

Liverpool. Feb. 19.

(Special Correspondence of Joseph P. Brunner & Co.)

The market for chemicals continues dull and lifeless, and business is hampered by the severe weather both here and abroad.

The United Alkali Company have made their dividend announcement for 1894 working, as follows: Preference shares, paid in full; ordinary shares, nil, and £28,000 carried forward. This is practically the result that has been anticipated by the trade for some time back.

Soda ash is inactive and nominal, spot range for casks are about: Leblanc ash, 48%, £3 10s.@£3 15s. per ton; 58%, £3 15s.@£4 per ton net cash. Ammonia ash 48%, £3@£3 5s. per ton; 58%, £3 5s.@£3 10s. per ton, net cash; bags 5s. per ton less.

Soda crystals are dull at £2 7s. 6d. per ton, less 5%.

Caustic soda is only selling to a limited extent, and values vary according to export market, the spot range being about 60%, £6 10s.@£6 12s. 6d. per ton; 70%, £7 10s.@£7 12s. 6d. per ton; 74%, $8 10s.@£8 12s. 6d.; 76%, £9 10s.@£10 per ton, net cash.

Bleaching powder quiet, but quotations for hardwood packages are nominally unchanged, ranging from £7 5s. to £7 10s. per ton net cash, according to destination.

Clorate of potash is very slow of sale, and 4½d. to 4¾d. is about nominal spot range.

Bicarb. soda continues unchanged, the finest quality being still quoted at £6 15s. per ton, less 2½% for 1 cwt. kegs, with usual allowances for larger packages.

Sulphate of ammonia is, if anything, a shade steadier at £11 7s. 6d.@£1 12s. 6d. per ton, less 2½%, for good gray 24-25% in double bags f. o. b. here, as to quality. The demand is quiet and not much moving to test the market.

Nitrate of soda is quiet, at £8 17s. 6d.@£9 2s. 6d. per ton, less 2½%, for double bags f. o. b. here, according to quality. Carb. ammonia—Lump, 3½d. per lb.; powdered, 3¾d per lb., less 2½%.

MINING STOCKS.

Complete quotations will be found on pages 214 and 215 of mining stocks listed and dealt in at:

New York.	Denver, Colo.	Salt Lake, Utah.
Boston.	Aspen, Colo.	London, England.
Baltimore.	Colorado Springs.	Paris, France.
Philadelphia.	Duluth, Minn.	Mexico.
San Francisco.	Helena, Mont.	Shanghai, China.
Santiago, Chile.	N. Y. Coal Stocks.	N. Y. Industrials.

NEW YORK, Friday Evening, March 1, 1895.

The past week in the mining stock market has been quiet and featureless. The total sales for the week amounted to only 2,470 shares.

The Comstocks ruled quiet, but showed an advancing tendency through the week. Consolidated California & Virginia show sales of 600 shares, at $2.50@$2.75. Of Chollar an equal number of shares were sold, the price advancing from 50c. to 56c. There was a solitary sale of 100 shares of Gould & Curry at 49c., and of 150 shares of Hale & Norcross at $1. Sierra Nevada advanced from 60c. to 74c., with sales of 400 shares. Other sales were: 100 shares of Savage at 40c., and 100 shares of Bullion at 15c.

Of the California stocks the only one to show any transactions this week was Standard Consolidated. There was a fair demand for this stock, and the price advanced to $2.75; the total sales amounted to 270 shares, of which 100 were sold at $2.65, and the balance at $2.75. A notice of the annual meeting of this company will be found in our mining news columns.

There was a solitary transaction, 100 shares of Little Chief, at 10c.; no other Colorado stock was traded in.

Of Horn Silver 50 shares were sold at $2.50. An abstract of the annual report of the Horn Silver Mining Company will be published next week.

Boston. Feb. 28.

(From Our Special Correspondent.)

Since our last report the market for copper stocks has ruled dull, with a tendency to lower prices, except in a few specialties which are influenced by rumors and reports concerning the condition and outlook of the properties. Boston and Montana declined early in the week from $36 to $34½, but has been strong during the past few days on the statement that the annual report would show a favorable condition of the company as compared with the exhibit twelve months ago, and recovered all of the decline, with later sales at $36½. Butte and Boston was heavy and declined from $10 to $9¼, recovering to $9½@$9¾ in later dealings.

Calumet & Hecla touched $295 early in the week, but later declined to the old figure, $290, at which it seems to be pegged. Tamarack sold at $146, but too much stock is offered for sale, and the price yielded readily to $143, and closed to-day with $140 as the best bid.

Quincy is fairly steady, with sales at $102 to $102¼, and a small lot at $102½. The scrip declined to $11. Franklin declined to $12, at which price all the sales were made. Osceola was quite firm at a decline from $22 to $21¼, closing at $21½. The annual report is considered quite good. Kearsarge is in good demand, and found ready buyers at $8 to $8¾. There is a deal of bullish talk on this stock, and orders said to come from the Lake to buy it indicate that the property is much more valuable than is generally supposed. Some go so far as to say that it will sell up with Osceola in a few months, but "doubtful things are uncertain," a truism which is well applied to mining stock. Wolverine continues to attract buyers at $3¾@$3¼. The assessment of $1 per share is called because the directors have purchased additional property and did not think it wise to diminish the existing surplus or working capital. We note a small sale of Atlantic at $10, a decline of $¼. Tamarack, Jr., sold at $11½, same as last sale.

Salt Lake City, Utah. Feb. 23.

(Special Report of James A. Pollock.)

The mining share market this week was dull, and narrow fluctuations have been the rule. The trading has been almost wholly confined to the regular dealers, who, while apparently not making any special effort to support the market, have been taking advantage of all the woak spots shown. Of this latter, however, there have been but few. People are seemingly satisfied with their investments, and are certainly in no mood to sell them. In short, the market ruled steady, but without movement.

Ajax was offered at $1; this company has levied an assessment of 3c. per share. Alliance was quiet, with a single persistent bidder at 60c., and the only offering was a small block at 85c. Work is being actively pushed in the sinking of the shaft in the main tunnel, and the superintendent expects to reach ore at about 400 ft. depth. Nothing is doing in Natural Gas; the shares look promising at 40c; Anchor is making an excellent showing in the way of production, but the shares are being sadly neglected. Bullion-Beck held steady, with small offerings. Centennial-Eureka maintains its character as a high-grade stock, as it pays 30% yearly. No trading in Dalton; the shares are motionless at 2½c. bid and 3½c. asked. Daly held its annual meeting February 19th, and re-elected the old board of directors; the company gave out no statement for publication, other than the report that the net earnings for the the year amounted to $60,000, and the total surplus with this addition was in the neighborhood of $300,000. Horn Silver failed to record a transaction, and buyers and sellers were far apart at $2.40 bid and $2.65 asked. The Horn Silver concentrator is now working day and night instead of daily, as heretofore. Mammoth continued the most active stock on the list, and advanced from $1 to $1.10 in the bidding; shares sold during the week up to $1.25, and ruled steady at the close at $1.25 asked. The new strike in the property holds out well, although the superintendent reports the average value of the ore not quite as high as was at first thought. The first car of ore sent in will run from 25 to 30 ozs. in gold, and carries silver and copper in addition. There is no longer any talk of an assessment to liquidate the existing indebtedness, the prevailing opinion being that the company will be able to clear itself out of the returns made from the late strike. Mercur was moderately active and sold at $3.50 Ontario is positively dull at $8 bid and $10 asked. There was a strong demand for Silver King, but opinions differ as to value, and only a small block was sold at $13.

San Francisco. Feb. 23.

(From our Special Correspondent.)

A week with a holiday in it is usually a dull one, and the present week has been no exception to the rule. Trading has been comparatively light and prices generally have showed a decline.

The market opened fairly strong on Monday, and there were sales of Consolidated California & Virginia at $2.40@$2.45; Chollar at 46c.; Crown Point at 35@36c., and Ophir at $1.40. Hale & Norcross showed a good deal of activity, and was bid up from 81 to 93c. on a number of small sales.

The fluctuations later in the week were not marked and closing prices are a little uncertain and may be put about as follows: Consolidate California & Virginia, $2.35@$2.40; Ophir, $1.35@$1.40; Hale & Norcross, 88c.; Chollar, 47@49c.; Gould & Curry, 40c.; Savage, 37c.; Best & Belcher, 73c.

Outside the Comstocks there was some trading. Sales of Bodie Consolidated were made at 83@85c.; Bulwer Consolidated at 12c.; Benton at 60c. On Monday 300 shares Caledonia were reported at 5c.

The Eureka Consolidated Mining Company, of Eureka district, Nevada, has levied an assessment of 25 cts. per share. This is the first assessment since June, 1889, when 50 cts. per share was levied. To date the Eureka Consolidated mine has paid $5,112,500 in dividends and has collected only $550,000 in assessments.

The McHugh mine in Nevada County, California, recently purchased by Charles Stepp, is to be incorporated as the Cadmus mine.

Mr. D. C. Bates has been elected a director of the Consolidated New York Mining Company to fill a vacancy caused by the death of C. C. Harvey.

BY TELEGRAPH.

SAN FRANCISCO, Cal., March 1.—The opening quotations to-day were as follows: Best & Belcher, 87c.; Bodie, 80c.; Bulwer, 14c.; Chollar, 55c.; Eureka Consolidated, 15c.; Gould & Gurry, 51c.; Hale & Norcross, $1.05; Mexican, 85c.; Mono, 22c.; Navajo, 5c.;

Ophir, $1.70; Savage, 45c.; Sierra Nevada, 71c.; Union Consolidated, 51c., Yellow Jacket, 61c.

London. Feb. 16.

(From Our Special Correspondent.)

After having a very dull fortnightly account, the new account which commenced February 11th has brought quite a revival of activity. Most of the South African gold shares have recovered the fall which took place during the previous fortnight, and in many cases further advances have been marked. It is not at all unlikely that every six weeks or two months we may expect to have a dull fortnight, for the labors at the carrying over are so great that the arrears of one settlement are not cleared away before it is time to prepare for another and exhausted human nature will find some method of recuperating. The Rand yield for January was lower than in December, being 177,463 oz. as compared with 182,104 oz., but as it is generally known that tremendous efforts were made in December by scraping the plates, etc., to bring the output for 1894 over 2,000,000 oz., and the falling off has not adversely affected the market. There are several mines and stocks in the South African market which deserve special notice this week.

The New Primrose mine has come to the front with the beginning of the year and now ranks as one of the largest producers, the output during January amounting to 10,271 oz. At the beginning of the year the number of stamps was increased from 100 to 160. May Consolidated has also become a more important mine, as the output for January was 3,584 oz. as compared with 2 568 in December. Wemmers have commenced shooting upward during the past week and now stand at £8½. This mine is one which has been mismanaged hitherto, chiefly on account of the ignorance of the methods of mining on the part of the developers, and the comparatively large output of gold has been entirely swallowed up in repairing and other expenditure. However, the management has recently been changed, with such good results that all debts have been paid off and a dividend will be paid soon. There is some probability of the Van Ryn mine taking a turn for the good shortly. Hitherto this mine has been shockingly bungled by its parent, the South African Trust and Finance Company. A great deal of money has been lost in successive reconstructions, and yet up to the present the mine has been as far from successful as at the commencement. Now, however, the control has passed from the South African Trust and Finance Company to Barnato Brothers, who are noted for pulling unsuccessful mines out of the mire and placing them on a paying footing. They achieve this highly desirable end firstly by supervising the financial arrangements in a masterly manner, and secondly by appointing an experienced American mining engineer as chief manager.

Shebas have had a serious setback by the dam overflowing and bursting and by the consequent flooding of the mine. It is estimated that the cost of putting things right again will be quite £30,000.

West Australia is now attracting a good deal of attention among the better class of financiers and capitalists, and though five-sixths of the companies so far formed and still forming are wildcats, some genuine work is being done. This kind of work is done more quietly than the wildcat business and so it is less noticeable to the casual observer. Reliable mining men are now in the country and more are continually going there, so that after the humbugs who are now attempting to get fat on the credulity of the British public have been starved out after the inevitable collapse has taken place there is every likelihood of the deposits being worked in a genuine manner. A syndicate has been formed in Paris to send experts out to West Australia. Thus it appears that the Frenchmen wish to get into the swim and be ready for the second and genuine boom.

South American stocks have been depressed and amongst Colombians Tolimas have suffered most and have fallen considerably in value.

Among American mining stocks practically nothing has been done in the way of buying and selling, and no variations are to be recorded in the quotations. The only noticeable feature has been the weakness of Harquahalas, caused by the poor report for January. The Montana Company has issued a circular explaining that the mill which is to be stopped is the one specially erected for the treatment of low grade ores. In past years the low grade ores exceeded the high grade in quantity, but now, on account of the recent development of the mine, there is not so large a proportion of low grade ore. The rumor of the discontinuance of mill work had caused selling of the shares, but this explanation seems to be satisfactory.

It will be a surprise to many to hear that the final dissolution of the Alturas Gold Company took place no longer back than February 15th. Resolutions in favor of winding up the company were passed at a general meeting held April 4th, 1889, but owing to a lawsuit against the company in America the winding up has never been completed until now.

It is pleasant to note, as a piece of news not often to be recorded nowadays, that an English company owning an American mine has commenced paying dividends. The company in question is the "Twin Lake Placers, Limited," which was formed in 1892 to work placer gold deposits in Lake and Chaffee Counties, Colorado. A dividend of 15% on a capital of £62,000 has just been declared for the year 1894. Owing to the unexplained refusal of the secretary of the company to furnish us with a copy of the report it is impossible to give details of the financial results or to give any extract from the manager's report on the condition of the mine.

Paris. Feb. 18.

(From Our Special Correspondent.)

The speculation in South African shares is less active this week, owing partly to the settlement in London, and partly, also, to the conviction that the shares are at present on too high a basis for profitable investment. It is, apparently, a most favorable time for the introduction of new stocks.

In our own shares there are no movements of special importance to note. The greatest activity for the week has been in nickels, and has resulted in a considerable fall. Huanchaca has also fallen on reports of unsavorable results from last year's operations. The copper stocks are all slightly lower. In the other mining shares there are only very slight changes.

I wrote you last week of the formation of a syndicate to deal in South African mining stocks. In fact, two are now announced. The first is to have 20,000,000 francs capital, and will bring some of those stocks on our Paris market at once. The other is organized by MM. Barnote and Ephrusse, and will operate on a capital of 2,500,000 francs. The first-named syndicate, it is reported, will also send an expert to examine and report on the Western Australian gold fields.

The returns of our foreign trade for the month of January are as follows:

	1894.	1895.
Imports:		
Food	Fr. 155,612,000	Fr. 80,314,000
Raw materials	195,295,000	170,045,000
Manufactures	40,018,000	36,341,000
Totals	390,925,000	286,700,000
Exports:		
Food	45,447,000	44,299,000
Raw materials	55,086,000	65,670,000
Manufactures	102,307,000	144,450,000
Postal parcels	7,128,000	9,633,000
Totals	209,968,000	264,052,000
Excess, imports	180,957,000	2,264,800

Much of the large decrease in the food imports is due to the fact that a very large quantity of wheat was brought into France in January, 1894, in anticipation of the increase of duty which took effect in the following month. It appears also that the prospect for our home wheat crop is favorable so far. The increase in exports of manufactures is a most favorable feature of the returns. The statement only gives totals; the details will appear later.

I sent you some weeks ago the general statement of our foreign commerce for 1894; it may be of interest to add some details from the full statement which is now published. The leading countries, those with which our commerce is largest, are shown the statement below, which gives the values of French trade with each, in francs, for three years:

Imports:	1892.	1893.	1894.
England	Fr. 530,655,000	Fr. 492,659,000	Fr. 503,022,000
Germany	337,439,000	323,074,000	325,553,000
Belgium	387,811,000	394,821,000	379,126,000
United States	533,470,000	317,149,000	371,267,000
Argentine R.	177,175,000	166,678,000	182,202,000
Spain	278,129,000	208,351,000	189,780,000
Italy	132,405,000	151,271,000	138,498,000
Brazil	82,556,000	72,876,000	56,993,000
Exports:			
	1892.	1893.	1894.
England	Fr. 1,030,145,000	Fr. 961,882,000	Fr. 963,196,000
Germany	355,354,000	336,337,000	345,611,000
Belgium	502,157,000	504,937,000	505,296,000
United States	240,038,000	204,937,000	190,104,000
Argentine R.	62,492,000	59,514,000	53,504,000
Spain	134,574,000	113,797,000	113,622,000
Italy	132,654,000	128,390,000	124,430,000
Brazil	69,520,000	75,344,000	83,391,000

From this you may note that our exports to England, Germany and Belguim are greater than our exports. The trade between France and the United States has decreased; last year our business with you formed 9·0% of the total imports and 5·8% of the total exports. Argentine grain and meat are gradually replacing yours in our markets, and the same may be said of Argentine and Brazilian cotton and Mexican copper. It is only natural that this should be the case; you will not buy of us, we will not buy of you—it is the law of trade. It is a pity that our Melines and McKinleys should have been able to deceive both peoples so far as to interrupt this intercourse so beneficial to both nations. Let us hope that we are growing wiser. Meantime it is well for you to remember that in the world's market for raw materials, Argentina, India and Russia are every year competing more sharply with you in grain, Russia also in oil.

Another thing to be noted from our returns is that, in spite of the decrease shown last year by Argentina—due to the financial troubles there—we are yearly increasing our trade with South America and Mexico. Perhaps we understand those people better than you; at any rate we accommodate ourselves better than you to their ideas. Then, too, we are of the Latin race, like themselves, and sentiment does count for something in business, even at the end of the nineteenth century.

I may add that our imports of copper in 1894 were valued at 35,663,000 fr., an increase of 954,000 fr., or 2·7% over 1893, in spite of the lower price of the metal. The lead imports were valued at 26,201,000 fr., an increase of 1,564,000 fr., or 6·3%. They came largely from Spain.

I send you some interesting historical tables compiled by M. Paul Leroy-Beaulieu for his new work on Political Economy, and published in "l'Economiste Francais" in advance of the book. They are too long to be given in my letter. I may note, also, that M. Leroy-Beaulieu has carefully studied your financial case, and has given his conclusions in an admirable article. Permit me to say that I most heartily approve his advice to withdraw your government from the banking business; the sooner the better. You are not easy for us to understand. To our surprise that a people so intelligent should tolerate such financial follies is added astonishment that a nation so independent should permit its government to dominate its money market as yours must, as long as your present currency muddle—one cannot call it a system—is suffered to exist. It is dangerous, and puts too great a power in one man, who might some day be a dishonest one.

We have troublesome and incompetent deputies of our own to deal with here; but how anyone can deliberately assail the public credit for a supposed party advantage passes our comprehension.

AZOTE.

I regret to say that the latest news from your side is not encouraging. While we must congratulate you on having a President with the courage to act in an emergency and with an understanding of the situation sufficient to save you from a crisis, we do not know here what to think of your Congress. We have Deputies of our own who are bad enough, but that you should be afflicted with a legislative assembly the majority of which is willing to see a great country like your own put on a par with Argentina, Brazil and Santo Domingo, is incredible to us. The United States ought to be a dominant factor in the trade of the world, but your deputies are apparently determined to throw away its natural advantages and to condemn you to permanent inferiority. We can only hope for you that public opinion may force some financial wisdom upon them, and may force them also to see that a petty factional gain may often mean future political ruin. Why is it that a people will often accept rulers so much smaller than itself? It is a problem not easily solved

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The yield of the Prussian taxes on dealings in transactions for nine months ending December 31st, was 17,657,132 mks., of which 11,208,414 mks. came from the tax on transactions, and 6,448,718 mks. from stamps. The amount collected was more than twice that for the same period in 1893.

DIVIDENDS.

Delaware & Hudson Canal Company, 1¾%, quarterly, payable at the office in New York, March 15th. Transfer books are closed from February 27th to March 16th.

MEETINGS.

Columbus, Hocking Valley & Toledo Railroad Company, annual meeting, at the office in Columbus, O., March 19th.

Eureka Gold Mining Company, annual meeting, to be held at the office of Delany & Delany, Colorado Springs, Colo., March 20th, at 10 a. m.

Hale & Norcross Silver Mining Company, annual meeting, at the office of the company, 309 Montgomery street, San Francisco, Cal., March 13th at 1 p. m.

Nixon Red Slate Quarrying Company, special meeting, at the office in New York, March 4th, at 11 a. m.

Pennsylvania Railroad Company, annual meeting, at the office in Philadelphia, Pa., March 12th, at 11 a. m.

Pennsylvania Coal Company, special meeting, to be held at the office in Dunmore, Pa., March 8th, at 10 a. m., for the purpose of obtaining the consent of the stockholders to the re-charter of the company. The transfer books are closed from February 26th to March 8th.

Sterling Iron & Railway Company, annual meeting, at the office of the company in New York, March 5th, at noon.

St. Mary's Canal Mineral Land Company, regular meeting, to be held at the Albany City National Bank, Albany, N. Y., March 6th, at noon.

South Eureka Mining Company, annual meeting, at the office of the company, 328 Montgomery street, San Francisco, Cal., March 6th, at noon.

ASSESSMENTS.

COMPANY.	No.	Dinqt.	Sale.	Amt.
Bullion, Nev.	44	Feb. 26	Mar. 21	$0.10
Challenge Con., Nev.	18	Mar. 26	April 16	.05
Confidence, Nev.	25	Feb. 13	Mar. 6	.30
Con. New York, Nev.	13	Mar. 26	April 17	.05
Del Rey, Nev.	4	Mar. 1	April 5	.05
Eureka Con., Nev.	13	Mar. 26	April 11	.25
Gould & Curry, Nev.	75	Feb. 19	Mar. 12	.15
Jay Gould, Nev.		Feb. 26		.01
Julia Con., Nev.	26	Mar. 20	April 10	.05
Justice, Nev.	58	Mar. 14	April 3	.10
Lucile, S. Dak.	1	Feb. 20	Mar. 9	.01
Pacific, Nev.	2	Mar. 11	Mar. 29	.03
Parole, Cal.		Feb. 25	Mar. 15	.06
Rainbow, S. D.	7	Feb. 25	Mar. 15	.001
Segr. Belcher, Nev.	15	Mar 12	April 1	.10
Sierra Nevada, Nev.	108	Feb. 20	Mar. 11	.25
South Eureka, Cal.	16	Feb. 18	Mar. 18	.01¼
Valenzuela, Mex.	3	Mar. 20	April 15	.01
Wolverine Copper, Mich.		Mar. 25		1.00

STOCK QUOTATIONS.

NEW YORK MINING STOCKS.*

NAME OF COMPANY.	Location.	Par val.	Feb. 23. H.	Feb. 23. L.	Feb. 24. H.	Feb. 24. L.	Feb. 26. H.	Feb. 26. L.	Feb. 27. H.	Feb. 27. L.	Feb. 28. H.	Feb. 28. L.	Mar. 1. H.	Mar. 1. L.	Sales
Alice	Mont.	25													
Belcher	Nev.	100													
Belle Isle	"	100													
Best & Belcher	"	100													
Bodie Cons	Cal.	100													
Brunswick	"														
Bullion	Nev.	100			.15										100
Colour	"	100	.50		.56		.55		.56						600
Comstock scrip	"														
do. T. bonds	"	100													
do T. stock	"	100													
Cons Cal. & Va	"	100	2.70		2.60		2.50		2.75	2.65	2.60				600
Crown Point	"	100													
Gould & Curry	Nev.	100									.49				100
Hale & Norcross	"	100									1.00				100
Homestake	Dak.	100													
Horn Silver	Utah	25			2.50										50
Lacrosse	Colo.	10													
Leadville Cons.	"	5													
Little Chief	"	10	.10												100
Mexican	Nev.	100													
Mono	Cal.	100													
Nevada Queen	Nev.	100													
Ontario	Utah	100													
Ophir	Nev.	100													
Phoenix of Ariz		100													
Plymouth	Cal.	10													
Potosi	Nev.	100													
Quick S. com	Cal.	100													
do. pref	"	100													
Savage	Nev.	100							.40						100
Scorpion	"														
Sierra Nevada	"	100	.63						.60				.74		400
Standard Cons.	Cal.	100													
Union Cons.	Nev.	100							2.65				2.75		270
Victor	Colo.	5													
Yellow Jacket	Nev.	100													

* Official quotations N. Y Cons. Stock and Petroleum Exchange. Total shares sold, 2,470.

BOSTON MINING STOCKS.*

NAME OF COMPANY.	Location.	Par val.	F b. 22.‡ H.	F b. 22.‡ L.	Fe . 23. H.	Fe . 23. L.	Feb 25. H.	Feb 25. L.	F. b. 25. H.	F. b. 25. L.	Feb. 26. H.	Feb. 26. L.	Feb. 28. H	Feb. 28. L.	Sales
Allouez	Mich.	25					.85								50
Atlantic	do.	25			10.00										25
Bost & Mont	Mont.	25			36.00	35.88	35.63	34.50	35.38	35.00	36.00	35.25	36.5	35.88	5,333
Butte & Bost	do.	25					9.75	9.25			9.69	9.75	9.75		580
Cal. & Hecla	Mich.	25			295	292	292		292		292	290			69
Catalpa	Colo.	10													
Centennial	Mich.	25													
Franklin	do.	25			12.40		12.40		12.40						250
Kearsarge	do.	25					8.00				8.25	8.13	8.75	8.13	810
Lake Superior	do	25													
Minnesota Ir.	Minn.	25													
Napaquiksver	Cal.	2													
Osceola	Mich.	25					21.50	21.25	21.50		21.75		21.50	21.25	285
Pontiac	do.	25													
Quincy	do.	25			102¼	102	102				102¾	102	102⅜		150
do. scrip	do.				41.00										5
Tamarack	do.	25			145	144					145	144½	144	48	48
Tamarack, Jr.	do.	25									11.50	11.00			16
Wolverine	do.	25					3.00		3.00		3.25	3.00	3.25	3.00	1,265

* Official quotations Boston Stock Exchange. ‡ Holiday. Total shares sold, 9,385.

DENVER MINING STOCKS.* Feb. 26.

NAME OF COMPANY.	Location.	Par value.	Opening	Highest.	Lowest.	Closing. Bid.	Closing. Ask	Sales.
Amity	Cripple Creek, Colo.		.009½	.01	.009½	.0 9½	.01	11,700
Anaconda	" " "	$5	.35	.37	.36	.36	.37	13,000
Aola	" " "	1	.008	.009	.008	.008	.009	69,000
Bangkok	Leadville, "	1	.25	.27½	.24½	.25	.25½	79,000
Big Six	" "		.08¾	.09¼	.08¼	.09½	.09½	19,600
Boston-Id	" "		22	.23	.22	.22	.23	4,000
Fannie R	" "	1						
Fairplay	" "		.40	.60	.40	.55	.60	6,000
Gold & Globe	Cripple Creek, "	1	.04½	.05½	.05	.05	.05½	29,000
Gold S	" "	1	.02¾	.02¾	.02¾	.02½	.02¾	16,00
Justice	Aspen, "	1	.03¾	.03¾	.02½	.02½	.02¾	6,00
Mollie Gibson	" "	5	.90	.95	.90	.91	.92½	7,800
Mt. Rosa	Cripple Creek, "	1	.02¾	.02¾	.02½	.02½	.02¾	12,800
Pharmacist	" " "	1	.04¾	.05	.05	.05	.05¾	22,000
Work	" " "	1	.02¾	.02¾	.02½	.02¾	.03	16,000

* Official quotations Colorado Mining Stock Exchange. Total shares sold, 312,0 0.

COLORADO SPRINGS MINING STOCKS.*

NAME OF COMPANY.†	Par val.	Feb. 18. H.	Feb. 18. L.	Feb. 19. H.	Feb. 19. L.	Feb. 20. H.	Feb. 20. L.	Feb. 21. H.	Feb. 21. L.	Feb 22.‡ H.	Feb 22.‡ L.	Feb. 23. H.	Feb. 23. L.	Sales.
Alamo	$1													
Anaconda	5													
Argent'm,J	2	.67¾	.64	.68		.68	.67½	.68	.65			.66½	.64	20,905
Bob Lee	1	.005	.004½	.004½								.004½		34,000
Cripple C	1	.01⅝												1,000
Cr. & C. C.	1													
Fanny Rosa	1			.06¾	.06									1,000
Franklin	1													
Gold & Gl.	1											.13½		700
Isabella	1	.01⅜		.02								.05		3,500
Mollie G.	5	.92	.90	.94	.91½	.95	.94	.97	.94½					8,890
Mt Rosa	1	.02½	.02½			.02½		.02½				.02½		7,650
Pharmacist	1											.05½		1,000
Portland	1	.50		.51	.50½			.50½				.51½		4,300
Specimen	1	.03½		.03¼										8,250
Summit	1													
Union	1	.11⅜	.10¾	.11¼	.11⅛	.11		.11½				.11		17,900
Work	1			.02⅜				.02⅜	.02½			.02¾	.02⅝	6,900

* Official quotations Colo. Springs Mining Stock Association. Total shares sold, 115,995.
† All the companies are located in Colorado. ‡ Holiday.

ASPEN MINING STOCKS.* Feb. 26.

NAME OF COMPANY.	Location.	Par value.	Latest actual selling price.	Bid.	Asked.
Alta Argent	Aspen, Colo	$1.00	$0.10	$0.10	$0.11
Argentum-Juniata	" "	2 00	.63	.65	.69½
Aspen Contact	" "	5.00	.25	.20	.25
Aspen Deep Mining	" "	1.00	.04½	.04	.04½
Best Friend	" "	1.00	.05		.05
Bi-metallic	" "	1.00	.02		.02½
Buckwheater	" "	1.00	.05	.06½	.07
Caverhill Cons	" "	1.00	.20	.19	.20
Del'a S	" "	5.00	.60	.60	.65
Gold Valley Placer	Routt Co.,	1.00	.10		.10
Little Annie	Aspen, "	1.00	.03	.03	.03
Mineral Farms Cons	" "	1.00	.14	.14	.16
Mollie Gibson	" "	5.00	.88	.85	.89
Old Colony Gold	Taylor River, "	1.00	.75		.75
Sheep Mt. T. & M	Crystal, "	1.00	.25		.25
Smuggler	Aspen, "	1.00	1.50	1.50	1.75
West Aspen Mtn	" "	1.00			.10

* Special report by Arkell, MacMillan & Stewart.

COAL AND COAL RAILROAD STOCKS.

NAME OF COMPANY.	Par value.	Feb. 23. H.	Feb. 23. L.	Feb. 25. H.	Feb. 25. L.	Feb. 26. H.	Feb. 26. L.	Feb. 27. H.	Feb. 27. L.	Feb. 28. H.	Feb. 28. L.	Mar. 1. H.	Mar. 1. L.	Sales
Am. Coal	25													
Balt. & Ohio	100	62¾		61¼		6.3⅛		60	58	57¾	55¾	57¾	57	5,225
Bun., R. & E.	100													
do. pref.	100													
Ches. & Ohio	100	16¾		16¼	16¼	16¼	16¼	16¼	16¼	16⅛	16	16⅛	16	4,675
do. 1st pref.	100													
Col. C. & I.	100									4⅜	4⅛			200
Col. Fuel	100													
do. pref.	100													
Col., H. V. & Tol	100			19		19				18¾	17¾			1,650
do. pfd	100													
Col. & H. Coal	100													
do. pfd	100													
Cons. Coal	100					31	30	31		31				200
Del. & Hud. C	100	128		127	126¾	127¼	126¾	126¾	126⅛	126		126¾	125⅝	1,417
Del., L. & W	50			158	157¾	158		159	158¾	158¾		158¾	158	2,036
Lake Erie & W	100					16				15⅝				265
do. pref.	100			71¾	70	71	70⅝							567
Lehigh C. & N.	50			46¾	46¼	46¼	46¼			45				186
Lehigh Val.	50	33		33⅛		32⅝	32⅜			32⅝	32¼			505
Lehigh & W. B	50													
Maryl'd C. pref.	100													
Morris & Ess.	100	156						159⅝						104
N. J. Central	100	82½	81¾	83⅝	81½	82¼	81⅝	86	82¼	83¼	82⅝			47,394
N. Y., L. & W	100	114¾						118		1.8				254
N. Y., L. E. & W	100	89⅜	85¼	85⅝	85⅜	85⅛	84⅛	85¼	85¼	85⅜	85⅛	85⅛	85⅜	6,335
do. pref.	100					17	16	16⅛						600
N. Y., Susq. & W	100	13		13¾		13¾		13¾		13	13⅜			1,570
do. pref.	100	58⅝				37¾	34	38	37½	37⅝	37⅛	37½	37½	2,695
N. & West.	50	2¼		2¼						2¼				300
do. pref.	50					10⅜				1¼				108
Penn. Coal	50													
Penn. R. R.	50	50¼	50	50	49¾	50	49¾			50	49⅜			3,022
Phil. & Read.	50	9⅞		9¾	9⅝	9⅝	9⅝			9⅝		9⅝	9¼	2,400
Tenn. C. & I.	100	14½	14			14½	13⅝	14¼						900
do. pref.	100													
Wheel. & L. E	100	9¾		9¼		9¼	9	9⅜		9¼	8⅝	9¼	9	1,150
do. pref.	100	36⅜		36½	35	35½				35	32⅝			425

Total shares sold, 85,744.

INDUSTRIAL AND TRUST STOCKS.*

NAME OF COMPANY.	Par value.	Feb. 23. H.	Feb. 23. L.	Feb 25. H.	Feb 25. L	Feb. 26. H.	Feb. 26. L.	Feb. 27. H.	Feb. 27. L.	Feb. 28. H.	Feb. 28. L.	Mar 1. H.	Mar 1. L.	Sales
Am. Cot Oil	100			19¼	19	20⅛	19¾	21	20⅛	21	20¾	2.3⅛	20⅝	3,210
do. pref.	100	63½		62⅝		63		64				64½		486
Am. Expr	100	111	110¾	111	109½	110	109							526
Am. Sug. Rf.	100	93	92	91⅝	91	91½	90⅝	92½	90⅜	92⅝	91¾	92⅝	91¾	149688
do. pref	100	92⅝	92¼	92		92		92⅝		92⅝	92¼	92⅝		1,169
Edis. E. L. Co.	100	97		99										115
Gen. Electric	100	29¾	29½	29	28¾	29	28¾	29½	28¾	29¾	28¾	29	27¾	23,698
do. pref.	100													
Nat. Lead Co	100	27¾	26½	27¾	26½	27½	26½	27¾	27¼	27	26¾	27¼	27	6,147
do. pref	100			82¾	82	82		82¾						469
Nat. Lins. Oil	100			20		20		19¾	18¾	19½				1,210
U. S. Cord. Co.	100	5⅜	4¾	5⅛	4¾	6¼	5¼	6	5¼	5⅜	4¾			1,128
do. pref	100	8⅝	7¾	8⅝	7¾	9¼	8½	9½	8⅝	8¾	7¾			7,181
do. gtd.	100	17½	16¾	17¼	17	18¼	18	18¾		18⅝	17			1,792
U. S. Expr's	100					42								140
U. S. Rubber	100	42		41¾	40¾	40	39¾	40⅝	40	40¾	40			3,150
do. pref.	100			94½		94	93½	94		94				155
Wells, Fa. & Co	100							104¾						7
West. Union	100	88	87¾	87¾	87⅜	87⅝	87⅛	87¾	87½	87⅝	86¾	87¾	87	13,703
†Westingh'se Air Brake	50													

*Official quotations N. Y. Stock Exchange. †Pittsburg quotations. Total shares sold, 219,914.

MONTANA STOCKS.* HELENA, Feb. 25.

NAME OF COMPANY.	Location	Co.'s office	Par value.	Bid.	Asked	Shares sold.	Price	Date.
Alice	Silv. Bow Co, Mont.	Butte, Mont.	$25	$0.35	$0.40			
Am. Dev. Co	Mont.,	Butte, "	1	3.00	4.00	500	$3.00	Dec. 3
Bald Butte	L. & C'fkeCo., Mont.	Helena "	1	3.75	4.00	300	3 60	Jan 30
Benton Group	Neihart	W. Sph. S. Mont	5	.10	.15			
Bi-Metallic	Granite Co. "	St. Louis, Mo.	25	5.50	4.50			
Combination	" "	Helena, Mont.	10	.50	.75	500	.72½	Jan. 29
D. Eagle (S. H.)	Fergus Co., "	Chicago, Ill.	1	.50	.75			
Elizabeth	Granite Co., Mont.	St. Louis, Mo.	10	.15	.18			
Granite Mt	" " "	" " "	25	1.50	2.75			
Hope	" " "	" " "	10	2.75	3 25			
Hope	B. JeffersonCo "	Helena, Mont.	5					
Hel'a & Frisco	Shoshone Co, Id.	" "	5					
Iron Mountain	Missoula Co., Mont.	" "	10	.50	.55	2,500	.47½	Jan. 28
Ontario	DeerLodgeCo. "	Helena, Mont.	1	.95	1.10	500	1.00	Jan. 25
Poorm'n (Cœur d'Alene)	Shoshone Co., Id.	Butte "	10	.20	35			

* Special Report by Samuel K. Davis.

San Francisco Stocks.*

NAME OF COMPANY	Location.	CLOSING QUOTATIONS. Feb. 22.†	Feb 23	Feb. 25	Feb 25	Feb 27	Feb. 28.
Alpha	Nev.						
Alta	"	.30	.30	31	31	.34	
Belcher	"	.36	.36	.43	.42	.45	
Belle Isle	"						
Best & Belch	"	.70	.71	.72	74	.84	
Bodie	Cal.	.80	.71	.80	.80	.82½	
Bulwer	"	.12	12	12	15	.14	
Challar	Nev.	.47	51	.50	.51	56	
Com'w'lth	"						
Con. C. & V.	"	2.20	2 30	2.40	2.40	2 65	
Crown Pt.	"	.4	.37	.41	.41	48	
G'ld & C'y	"	.38	.40	.44	.44	.40	
Hale & N.	"	.85	.93	.92	.9.	.97	
M. White	"						
Mexican	"	.68	.69	.71	.73	.80	
Mono	Cal	.18	.20	2	20	.25	
Ophir	Nev.	1.35	1.30	1 35	1.40	1.65	
Potosi	"	.45	.48	.48	.48	.50	
Savage	"	.34	.40	.40	41	41	
Sierra Nev	"	.58	.59	.6	.63	.67	
Sul'n Cor	"	.28	.43	.41	45	.48	
Utah	"	.06	.05	.05	.4 6	.05	
Yel. Jack	"	.41	.42	.50	.52	.56	

* Par value of all shares quoted is $100.
† Holiday.

Baltimore Stocks.* Feb. 26

Name of Company.	Par value.	Bid.	Ask.
Blt. & N. C., N. C	5		$0 02
B'lt. M. & S. N. C			.02
Conr. Hill, N. C	5		.04
Cons. Coal, Md	100	31.00	31.50
Con G. & C., N. C	5		.02
Ga. C. Coal, Md	100	102.50	105.00
How. C. & C., Md	5	1.10	1.20
Lake Chr., Md	5		.10
Ore Knob, Md	10		.10
Silver Valley			20.00

*Official quotations Baltimore Exch'ge.

Duluth Stocks.* Feb. 25.

Name of Company.	Par value	Price	Bid.	Asked
Adams Iron Co.	10		$2.00	$2.50
Biwabik M. L. Co.	100	17.50	18.00	20.00
Chandler Ir Co.	25			27 00
Clev. Cliffs I. Co.	100		25.00	32.00
Gr't No. M. Co.	100		1.75	2 00
Gr't West. M. Co.	100		1.00	1.50
Jackson Ir Co.	25			60.00
L. Sup. C. Ir. M.	100	11.5	12.00	12.50
L. Sup. (Marq'te)	25		17 00	20.00
Mes. C., L. & E. Co	10	5.00		4.00
Mes. Chief I. Co	100	2.50	2.50	3 00
Mes. Mt. Ir. Co.	100	16.00	16.00	17 00
Met. L. & I. Co	25			60.00
Minnes'ta Ir. Co.	100	40.00	40.00	55.00
Mountain Ir. Co.	100	42.00	45.00	50.00
Ohio Mining Co.	100	4 00	4.00	5.00
Pioneer Ir. Co.	25		.25	1.00
Pitts. & L. A Co	100	....	55.00	62.00
Sec't v L. & E. Co	10		16.00	18 00

Pittsburg Stocks.* Feb. 28.

Name of Company.	Par value	Last sale.	Bid.	Ask.
GAS STOCKS:				
Allegheny	$100		$49½	$51¼
Chartiers Val	100			8
Ohio Valley	50			40
People's Nat. Gas	50		34	36
People's Nat. Gas and Pipeage	25		12¾	13¼
Pennsylvania	50		8	
Philа. Co.	50		17¾	18
Wheeling	50		24	25
COAL STOCKS:				
N. Y. & Cl. G. C.	50			40
MINING STOCKS:				
Lustre	10		9½	12¼
OIL CO. STOCKS:				
Washington	50			50

Official quotations Pittsburg Exch'ge.

LONDON. Week ending Feb. 16.

NAME OF COMPANY.	Par value.	Quotations. Buyer.	Seller.
AMERICANS:		£ s. d.	£ s. d.
Alaska-Mexican	£1	18 9	1 1 3
Alaska Treadwell	5	2 17 6	3 2 6
American Belle	1	0	1 3
De Lamar	1	1 5 9	1 6 3
Elkhorn	1	9 9	10 3
Harquahala	1	5 3	5 9
Holcomb Valley	5s.	2 0	2 3
Jay Hawk	£1	9	1 3
Montana	1	10 6	11 6
New Guston	1	8 9	11 3
Palmarejo (Mex.)	1	1 0	1 6
Plumas-Eureka	2	12 6	15 0
Poorman	5s.	2 3	2 9
Richmond	£5	8 9	11 3
Sierra Buttes	2	10 0	12 6
Springdale	4s.	2 6	2 9
SOUTH AMERICANS:			
Colombian Hydraulic	£1	12 6	13 6
Frontino & Bolivia	1	1 6 3	1 8 9
Tolima, A shares	5	6 10 0	7 0 0
" B "	5	5 10 0	6 10 0
COPPER STOCKS:			
Cape Copper	2	1 8 9	1 11 3
" " preferred	2	1 18 9	2 1 3
Copiapo	2	1 11 3	1 13 9

NAME OF COMPANY.	Par value.	Quotations. Buyer.	S. ller.
COPPER STOCKS:		£ s. d.	£ s. d.
Rio Tinto	£'0	12 13 9	12 16 3
Tharsis	2	5 0 0	5 5 0
AUSTRALIANS:			
Bayley's Reward	1	11 3	1 9
Broken Hil Proprietary	8s.	1 17 0	1 18 0
Mt. Morgan Gold	17s. 6d.	2 10 0	2 17 6
INDIANS:			
Champion Reef	£1	4 0 0	4 2 6
Mysore	1	2 13 9	2 16 3
Nundydroog	1	2 0 0	2 1 3
Ooregum		2 17 6	3 0 0
" preferred		3 8 9	3 11 3
SOUTH AFRICANS:			
British S. Africa Co		2 2 3	2 2 9
City & Suburban	1	18 12 6	18 17 6
Crown Reef	1	9 17 6	10 0 0
De BeersCon (diam'nd)	5	20 5 0	20 7 6
Durban-Roodepoort	1	6 17 6	7 0 0
Ferreira	1	15 7 6	15 12 6
Geldenhuis Estate		5 16 3	5 18 9
Jagersfontein		18 5 0	18 17 6
Langlaagte Estate		4 6 3	4 8 9
New Primrose		6 0 0	6 2 6
Robinson		7 17 6	8 0 0
Simmer & Jack	1	11 17 6	12 0 0

Salt Lake City Stocks.* Feb. 23.

Name of Company.	Par val.	Bid.	Asked.	Sales.
Ajax			$1.00	
Alliance	$1	.60	.85	$0.70
Am. Nat. G's		.30	.40	.35
Anchor	20	3.00	3.50	3.40
Appex			.10	
Bogan	1	.50	.90	.80
Bull-Beck	10	8.00	9.00	8 75
Cane Spr'gs		.50	1.00	.80
Cent. E'reka	50	39.50	41.00	42.00
Cleve. Con.	1		.50	.50
Comstock	25	.20	.30	.25
Crescent	25	.02½	.05	.04
Dalton	5	.02½	.03½	.03
Daly	20	6.00	7.50	7.25
Daly West	20	5.00	6.00	6.00
Elko	2½		.25	.25
Eureka Hill		125 00		
Horn Silver	25	2.40	2.65	2.50
Little Pittsburg			.95	
Lucky Bill	10		.49	.40
Mammoth	25	1.05	1.25	1.25
Mecars	25	.50	.85	.75
Mercur	25	3.25	4.00	3 50
New Tintic			3.00	
Niagara			2.50	
North. Spy			2.50	
No. Eureka	1		.10	.10
Ontario	100	8.00	10.00	9.25
Silver King	20	12.00	13.50	13.09
Silver Spar	5		1.00	1.00
Tetro	1		.25	.25
Utah	1	.50	1.00	

*Special Report by James A. Pollock.

Santiago, Chile.* Jan. 21.

COMPANY.	Par val.	Prices. Bid.	Ask.	Last sale.
Arturo Prat		$42⅛	$43¼	$42
D. de Huantajaya		45	46	45
Huanchaca		120	121	121
Oruro, stock		3,130	3,140	3,130
do bonds, 10%		95	100	100
Nitrate Co's:				
Antofogasta		245	246	245
Internacional		29	30	31
Union		84	85	84

*Prices are Chilean pesos, or dollars.

Shanghai, China. Jan. 11.

Name of Co.	Par.	Last div.	Price.
Jelebu Mg Co.	$5	$0 25	Tls. 4·02
Punj. Mg. Co.	4		" 5·11
do. pref.	1		" 1·24
Raub A'lian'd	£1	10½d.	" 3·65
Sheridan Con.	Tls. 100		" 1·00

Philadelphia Stocks.* Feb. 28.

Name of Company.	Par value	Bid.	Ask.
Bethlehem Iron Co.			80
Blooming, C. & C. Co.	$50		
Cambria Iron Co.	50		$47
Hutchinson Coal Co.			
do. Pref.		25⅝	
North. Liberties Gas.	25	$32½	
Penn. Nat. Gas.			49½
Penn. Salt Co.	50	96	
Penn. Gas Coal Co.	50		39
Westmoreland Coal	50	50	50¼

*Official quotations Phil. Exchange.

PARIS. Week ending Feb. 16.

NAME OF COMPANY.	Country.	Product.	Par value.	Divs. last year.	Prices. Op'ning.	Closing.
			Fr.	Fr	Fr.	Fr.
Acieries de Creusot	France	Steel manufrs.	2,000	100.00	1,900.00	1,720.00
" " Firminy	"	" "	500	85.00	1,595.00	1,550.00
" " Fives-Lille	"	" "	500	35.00	620.00	620.00
" " la Marine	"	" "	500	30.00	780.00	780.00
Aguas Tenidas	Spain	Iron pyrites	500	40.00	450.00	460.00
Boleo	Lower Calif'nia	Copper	500		675.00	707.50
Bruay	France	Coal	400	600.00	13,750.00	13,750.00
Callao	Venezuela	Gold	125		15.00	15.00
Cape Copper	S. Africa	Copper	50	1.50	38.75	38.75
Champ d'Or	"	Gold	25		116.00	105.00
Courrieres	France	Coal	300	150.00	4,050.00	4,050.00
De Beers Consolidated	S. Africa	Diamonds	125	15.63	505.00	510.00
Dombrowa	Russia	Coal	500		495.00	510.00
Dynamite Francaise	France	Explosives	500	25 00	705.00	710.00
Huanchaca	Bolivia	Silver	125	5.00	162.50	150.00
Jerez-Lanteira	Spain	Copper			6.00	6.00
Kebao	Tonquin	Coal	500		567.00	555.00
Laurium	Greece	Zinc and lead	500	40.00	550.00	548.00
Malfidano	Italy	Zinc	500	52.50	1,000.00	1,000.00
Metaux, Cie. Fran. de	France	Metal dealers	500	87.50	258.00	235.00
Mokta el-Hadid	Algeria	Iron	500	40.00	795.00	790.00
Nickel	New Caledonia	Nickel	500	30.00	280.00	255.00
Rio Tinto	Spain	Copper	250	17.50		384.00
Robinson	S. Africa	Gold	125	12.50	197.50	206.75
Saint Elie	French Guiana	"	25		25.00	38.00
Soufres Roumaines	Italy	Sulphur			188.00	185.00
Tharsis	Spain	Copper	50	6.25	112.50	113.75
Vielle Montagne	Belgium	Zinc	80	30.00	455.00	465.00

MEXICO. Week Ending Feb. 21.

NAME OF COMPANY.	State.	No. of shares.	Last dividend.	Last assessment.	Prices. Opening.	Closing.
Asturiana y Anexas	Zacatecas	2,500	$10.00		$510	$510
Cerro Colorado	Chihuahua	15,000			30	32
Concepcion y Anexas	S. Luis Potosi	2,700			220	220
El Oro	Guanajuato	500			130	140
do. pref	"	2,000		$0.02	130	140
Huautla Sta. Ana	Morelos	4,000	1.50		100	100
Luz de Iturbia	Michoacan	2,000		0.50	50	60
do. Free stock	"	1,000			30	35
Luz de Maravillas	Hidalgo	1,100			380	350
Purisima de los Con.	Zacatecas	2,400			50	50
Real del Monte	Hidalgo	2,554	20.00		1,290	1,280
Rosario y Anexas	Durango	4,800			125	115
do. pref	"	2,400			80	80
San Rafael del Oro	Guanajuato	3,000			300	300
Sta. Gertr. y Anexas	Hidalgo	28 800	1.50		79	79
do. free stock	"	9,600	1 03		18	18
Ste. Maria de la Paz	S. Luis Potosi	2,400			80	70
Tlauzinco	Puebla	2,400			32	30
Zomelahuacan (gold)	Vera Cruz	5,000			100	105
Zona Min. de Pozos	Guanajuato	2,400		1.50	180	200

NOTE.—In most Mexican mining companies the shares have no fixed par value. The capital is formed of a certain number of shares, the total value not being named. Prices are in Mexican dollars.

The Table of Current Prices will Appear as Usual Next Week.

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total Levied	Assessments. Date and amount of last.			Dividends. Total paid.	Dividends. Date & amount of last.		
1	Adams, s. L. c.	Colo..	$1,500,000	150,000	$10	*	.....	.....	.....	$637,500	Jan..	1892	.05
2	Alaska-Treadwell, g.	Al'ska	5,000,000	200,000	25	.....	.....	.....	.....	2,300,000	Jan	1895	.37½
3	Alice, s.	Mont.	10,000,000	400,000	25	*	.....	.....	.....	975,000	Nov..	1891	.06¼
4	Amador, G.	Cal.	1,250,000	250,000	5	*	.....	.....	.....	31,250	Aug..	1890	.12½
5	American, G.	Colo..	3,000,000	300,000	10	*	.....	.....	.....	225,000	Mar..	1892	.05
6	American Belle, s. G. C	Colo.	2,000,000	400,000	5	*	.....	.....	.....	50,000	April	1891	.12½
7	Americ'n & Nettie, G. & S	Colo..	.....	300,000	.....	.....	.....	.....	.....	175,000	Mar..	1892	.05
8	Atlantic, C.	Mich.	1,000,000	40,000	25	280,000	April	1875	$1.00	700,000	Feb..	1891	.00
9	Argyle, G.	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....	20,000	Mar.	1892	.01
10	Aspen Mg. & S., s. L.	Colo..	2,000,000	200,000	10	*	.....	.....	.....	900,000	July.	1894	.10
11	Aurora, L.	Mich..	2,500,000	100,000	25	.....	.....	.....	.....	650,000	Feb..	1893	2.00
12	Badger, s	Ont..	250,000	50,000	5	.....	.....	.....	.....	37,500	Mar.	1880	.25
13	Bald Butte	Mont.	250,000	250,000	1	*	.....	.....	.....	332,000	Jan.	1895	.05
14	Bangkk-C. Bell, s. L.	Colo..	600,000	600,000	1	.....	.....	.....	.....	59,510	Feb..	1895	.01
15	Bates Hunter, s. &	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....	67,500	Dec..	1891	.00½
16	Belden, F. E., m.	N. H.	500,000	100,000	5	*	.....	.....	.....	131,115	Feb	1895	.05
17	Belle Isle, s.	Nev..	10,000,000	100,000	100	230,271	Sept	1893	.10	900,000	Dec..	1879	.25
18	Belcher, s. G.	Nev..	10,400,000	104,000	100	3,262,900	Nov.	1892	.20	15,597,000	April	1876	1.00
19	Bellevue, Idaho, s. L.	Idaho	1,250,000	125,000	10	120,000	Dec..	1889	.25	200,000	Jan..	1890	.10
20	Best Friend	Colo.	1,000,000	1,000,000	1	*	.....	.....	.....	90,000	Feb..	1892	.01
21	Bi-Metallic, s. G.	Mont.	5,000,000	200,000	25	.....	.....	.....	.....	1,630,000	June	1893	.10
22	Bodie Con., G. I.	Cal..	10,000,000	100,000	100	714,990	July	1893	.15	1,677,572	Dec..	1894	.25
23	Boston & Mont., G.	Mont.	3,125,000	125,000	25	*	.....	.....	.....	20,000	June	1866	.15
24	Boston & Mont., C. S.	Mont.	2,000,000	80,000	25	*	.....	.....	.....	2,325,000	Nov..	1894	1.00
25	Brotherton, L.	Mich.	2,000,000	80,000	25	*	.....	.....	.....	120,000	Mar..	1893	.50
26	Bulwer, G.	Cal..	10,000,000	100,000	10	155,000	July	1893	.15	190,000	Oct..	1892	.05
27	Bunker Hill & S. S. L.	Idaho	3,000,000	300,000	10	*	.....	.....	.....	150,000	Oct..	1888	.06
28	Caledonia, G.	Dak..	1,000,000	100,000	100	505,000	May.	1885	.15	192,000	Oct..	1890	.08
29	Calumet & Hecla C.,	Mich..	2,500,000	100,000	25	1,200,000	.....	.....	.....	40,850,000	Aug..	1894	5.00
30	Center'l-Eureka, s. L.	Utah.	1,500,000	30,000	50	30,000	Mar.	1888	1.00	945,000	Feb	1895	1.00
31	Central, C.	Mich..	500,000	20,000	25	100,000	Oct..	1861	.65	1,970,900	Feb..	1891	1.00
32	Champion, G	Cali..	340,000	34,000	10	150,000	.....	.....	.....	200,900	Dec..	1894	.10
33	Chrysolite, S. L.	Colo..	10,000,000	200,000	50	*	.....	.....	.....	1,850,000	Dec..	1884	.25
34	Cœur D'Alene, S. L.	Idaho	5,000,000	500,000	10	.....	.....	.....	.....	340,000	June	1893	.03
35	Colorado Central, S. L.	Colo.	2,750,000	275,000	10	*	.....	.....	.....	502,661	April	1893	.05
36	Commonwealth, S.	Nev..	10,000,000	100,000	100	200,000	Nov.	1893	.10	20,000	Nov..	189	.20
37	Confidence, S. L.	Nev..	2,496,000	24,960	100	1,589,550	Aug..	1892	.50	199,680	April	188	1.00
38	Cons. Cal. & Va., S. G	Nev.	21,600,000	216,000	100	216,000	Dec..	1892	.50	3,898,800	Feb.	1895	.25
39	Contention, S.	Aris.	12,500,000	250,000	50	.....	.....	.....	.....	2,637,500	Aug.	1892	.20
40	Cook's Peak, S.	N. M.	2,000,000	200,000	10	.....	.....	.....	.....	119,332	Nov.	1892	.05
41	Cop. Queen Con., C.	Aris.	2,000,000	200,000	10	.....	.....	.....	.....	1,860,000	Feb..	1895	.25
42	Coptis	Nev.	10,000,000	100,000	100	.....	.....	.....	.....	68,000	Feb..	1895	.01
43	Cortes, S.	Nev.	1,500,000	300,000	05	*	.....	.....	.....	687,000	Mar..	1892	.50
44	Crescent, S. L. G.	Utah.	15,000,000	600,000	25	60,000	Oct.	892	.10	238,000	Oct..	1888	.08
45	Crown Point, G. S.	Nev..	10,000,000	100,000	100	2,750,000	June	1893	.25	11,898,000	Jan..	1875	.00
46	Daly, S. L.	Utah.	8,000,000	150,000	30	.....	.....	.....	.....	2,850,000	May..	1893	.25
47	Deadwood-Terra, G.	Dak..	5,000,000	200,000	25	*	.....	.....	.....	1,140,000	Sept.	1892	.05
48	Delamar, G. S.	Idaho	2,000,000	400,000	25	.....	.....	.....	.....	1,650,000	Jan ..	1895	.25
49	Derbec B. Grav., G.	Cal...	10,000,000	100,000	100	100,000	Sept.	1892	.10	265,000	Mar..	1894	.05
50	Dexter, G. S	Nev..	1,000,000	100,000	10	*	.....	.....	.....	105,000	July	1893	.25
51	Elkhorn, S.	Mont.	1,000,000	200,000	5	*	.....	.....	.....	1,370,176	Dec .	1894	18
52	Elkton	Colo..	500,000	500,000	1	*	.....	.....	.....	30,000	Aug..	1894	.01
53	Enterprise, S.	Colo..	2,500,000	500,000	5	*	.....	.....	.....	850,000	June	1893	.25
54	Eureka Con., S. L., G.	Nev...	1,000,000	50,000	100	550,000	June	1889	.50	5,112,500	Jan..	1892	.25
55	Evening Star, S. L., G.	Colo..	500,000	50,000	10	*	.....	.....	.....	1,437,500	Dec..	1889	.25
56	Father de Smet, G.	Dak..	10,000,000	100,000	100	200,000	Nov..	1878	1.00	1,125,000	Dec..	1888	.20
57	Franklin, C.	Mich..	1,000,000	40,000	25	220,000	June	1871	.....	1,240,000	Dec..	1893	2.00
58	Glengarry	Mont.	1,000,000	100,000	10	.....	.....	.....	.....	100,000	June.	1891	10
59	Gold & Globe, G	Colo.,	750,000	750,000	1	.....	.....	.....	.....	7,500	Feb	1895	.00
60	Gould & Curry, S. G.	Nev...	10,800,000	108,000	100	4,988,400	Oct .	1893	.10	3,826,800	Oct..	1870	10.00
61	Grand Prize, S.	Nev...	10,000,000	100,000	100	285,000	Jan..	1890	.30	495,000	Mar.	1884	.25
62	Granite Mountain, S.	Mont.	10,000,000	400,000	25	.....	.....	.....	.....	12,120,000	July.	1892	.20
63	Great Western, L. Q..	Cal..	5,000,000	50,000	100	.....	.....	.....	.....	988,366	Nov.	1893	.25
64	Hale & Norcross, G. S.	Nev...	11,200,000	112,000	100	5,646,800	June	1893	.50	1,822,000	Aug.	1888	.50
65	Hecla Con., S. G. L. C.	Mont.	1,500,000	30,000	50	.....	.....	.....	.....	2,025,000	Jan .	1895	.50
66	Hel'a Mg. & Red, S. L. G.	Mont.	3,315,000	663,000	5	*	.....	.....	.....	197,970	July.	1886	.06
67	Helena & Frisco, S. L.	Idaho	2,500,000	500,000	5	.....	.....	.....	.....	170,000	July.	891	.02
68	Helena & Victor	Mont.	1,000,000	200,000	5	.....	.....	.....	.....	80,000	May.	1892	.05
69	¶ Holmes, S.	Nev...	10,000,000	100,000	100	345,000	Mar.	1890	.25	75,000	Apr..	1892	.25
70	Homestake, G.	Dak..	12,500,000	125,000	100	200,000	July.	1878	1.00	5,462,500	Jan..	1895	.25
71	Hope, S.	Mont.	1,000,000	100,000	10	*	.....	.....	.....	6 3,250	Jan	1895	.10
72	Horn-Silver, S. L.	Utah.	10,000,000	400,000	25	*	.....	.....	.....	5,037,500	Dec .	1894	12½
73	Idaho, G.	Cal..	310,000	3,100	100	.....	.....	.....	.....	5,489,000	Sept.	1893	2.50
74	Illinois, S.	N. M.	100,000	100,000	1	*	.....	.....	.....	45,000	April	1889	.20
75	Iron Mountain, S.	Mont.	5,000,000	500,000	10	*	.....	.....	.....	315,000	Jan..	1895	.02
76	Iron-Silver, S. L.	Colo.	10,000,000	500,000	20	*	.....	.....	.....	2,500,000	April	1888	.20
77	Jackson, G. S.	Nev..	5,000,000	50,000	100	247,500	Mar..	1893	.20	8 0,000	Feb.	1865	.4
78	Kearsarge, C.	Mich..	1,000,000	40,000	25	190,000	Oct..	1887	1.00	80,000	Jan.	1890	2.00
79	Kennedy	Cal..	10,000,000	100,000	100	.....	.....	.....	.....	1,458,000	Jan..	1895	.45
80	Kentuck, S. G.	Nev..	3,000,000	30,000	100	454,180	Oct.	1891	.15	1,350,000	Dec.	1886	.10
81	Leadville Con., S. L.	Colo.	4,000,000	400,000	10	*	.....	.....	.....	016,000	Feb..	1893	.03
82	Lexington, G. S.	Mont.	4,000,000	40,000	100	*	.....	.....	.....	652,200	July.	1893	.90
83	Little Chief, S. L.	Colo..	10,000,000	200,000	50	*	.....	.....	.....	820,000	Dec..	1890	.05
84	Maid of Erin	Colo..	3,000,000	600,000	5	.....	.....	.....	.....	708,500	April	1893	.25
85	Mammoth, S. L. C.	Utah	10,000,000	400,000	250	110,000	.....	1882	.25	1,040,000	Dec..	1891	.10
86	Maxfield	Utah.	8,000,000	300,000	10	.....	.....	.....	.....	117,000	April	1892	.03
87	Mayflower, D. gravel	Cal..	1,200,000	60,000	20	.....	.....	.....	.....	214,000	Feb..	1895	.10
88	Minas Prietas, G. S.	Mex..	1,000,000	100,000	10	*	.....	.....	.....	350,000	Dec..	1890	.50
89	Minnesota, C.	Mich..	1,000,000	40,000	25	420,000	April	1886	1.00	1,820,000	Mar.	1876	
90	Minnesota Iron, L.	Minn.	16,500,000	165,000	100	.....	.....	.....	.....	2,745,000	April.	189	.50
91	Mollie Gibson, S.	Colo..	5 000,000	1,000,000	5	*	.....	.....	.....	4 080,000	Jan..	1895	.05
92	Monitor, G.	S. Dak	2,500,000	250,000	10	.....	.....	.....	.....	45,000	Oct..	1890	.03
93	Mono, G.	Cal..	3,000,000	300,000	100	797,500	Feb..	1893	.25	12,500	Mar	1886	.25
94	Montana, Lt., G. S.	Mont.	3,300,000	660,000	5	*	.....	.....	.....	2,701 75	Jan..	1895	12½
95	Moose	Colo..	600,000	600,000	1	.....	.....	.....	.....	52,000	Nov.	1894	.02
96	Morning Star, S. L.	Colo..	1,000,000	100,000	10	.....	.....	.....	.....	1,025,000	Dec..	91	.25
97	Morning Star Drift, G	Cal..	240,000	2,400	100	.....	.....	.....	.....	2 52,000	Jan.		4.00
98	Moulton, S. G.	Mont.	2,000,000	400,000	5	*	.....	.....	.....	440,000	Nov.	1892	.07½
99	Mt. Diablo, S.	Nev..	5,000,000	50,000	100	137,500	June	1880	2.00	225,000	Nov	1893	.30
100	Mt. Rosa, G	Cal...	700,000	100,000	7	.....	.....	.....	.....	660,000	Jan..	1895	.10
101	Napa, G.	Cal..	1,00 ,000	1,000,000	1	.....	.....	.....	.....	10,000	Jan...	1895	.01
102	Navajo, G. S.	Nev..	10,000,000	100,000	100	538,714	Sept.	1893	.10	226,111	April	1889	.10
103	New Guston, S.	Colo..	550,000	110,000	5	.....	.....	.....	.....	1,977,540	April	1892	.75
104	North Banner Con	Cal..	1,000,000	100,000	10	.....	.....	.....	.....	20,000	July..	1891	.05
105	North Commonw'th	Nev..	10,000,000	100,000	10	90,000	Jan..	1893	.10	25,000	June	1891	.25
106	N. Hoover Hill, G. S.	N. C	300,000	120,000	2½	*	.....	.....	.....	30,000	Dec..	1885	.06¼
107	North Belle Isle, S.	Nev..	10,000,000	100,000	100	513,675	April	1893	.10	230,000	May	1888	.50
108	North Star, G.	Cal..	1,000,000	100,000	10	20,000	.....	1885	.02	450,000	June	1893	.50
109	Omaha Cons., G.	Cal..	2,400,000	24,000	100	.....	.....	.....	.....	97,200	July..	1894	.15
110	Ontario, S. L.	Utah	15,000,000	150,000	100	.....	.....	.....	.....	13,175,000	Oct..	1892	.50
111	Ophir, G. S.	Nev..	10,000,000	100,000	100	4,391,040	July	1893	.25	1,595,800	Jan..	1880	1.00
112	Osceola, C.	Mich..	1,250,000	50,000	25	480,000	April	1876	1.60	1,897,500	Jan..	1895	1.00
113	Pacific Coast, B.	Cal...	1,500,000	15,000	100	.....	.....	.....	.....	422,500	July.	1893	1.00
114	Parrot, C.	Mont.	1,800,000	180,000	10	.....	.....	.....	.....	1,569,000	June	1891	.10
115	Petro	Utah.	10,000,000	10,025	100	.....	.....	.....	.....	17,500	July..	1893	.75
116	Pharmacist, G.	Cal..	1,406,250	140 600	50	.....	.....	.....	.....	2,696,295	Oct..	1893	.18
117	Plumas Eureka, G.	Colo..	1,2 0,000	1,200,000	1	.....	.....	.....	.....	8 ,000	June,	1893	.01
118	Plymouth Con, G.	Cal..	,000,000	,000,000	10	*	.....	.....	.....	2,280,000	Sept	1888	.40
119	Poorman, G. S.	Idaho	375,000	300,000	125	*	.....	.....	.....	68,250	Sept	1892	.40
120	Portland, G.	Colo..	3,000,000	3,000,000	1	.....	.....	.....	.....	120,000	Feb..	1895	.01
121	Quicksilver, pref., Q	Cal..	4,300,000	43,000	100	.....	.....	.....	.....	1,825,911	June	1891	1.25
122	" com., Q	Cal..	5,700,000	57,000	100	.....	.....	.....	.....	643.867	July	1892	.40
123	Quincy, C.	Mich..	1,250,000	50,000	25	200,000	Dec..	1862	.....	7,450,000	Feb.	1895	4.00
124	Red Cloud	Idaho	1,000,000	200,000	5	.....	.....	.....	.....	153,000	Dec	1892	.10
125	Retriever, L.	S. Dak	1,250,000	250,000	5	.....	.....	.....	.....	20,000	Aug.	1891	.03
126	Rialto, G.	Colo..	300,000	300,000	1	*	.....	.....	.....	50,250	April	1892	.01½
127	Richmond, S. L.	Nev..	1,350,000	54,000	25	*	.....	.....	.....	4.359,887	Oct..	1894	.25
128	Rico-Aspen	Colo..	5,000,000	1,000,000	5	.....	.....	.....	.....	325,000	Nov..	1894	.02½
129	Ridge, C.	Mich..	1,250,000	50,000	25	219,939	Mar.	1886	50	99,785	Feb..	1886	.50
130	Robinson Con., S. L.	Colo..	10,000,000	200,000	50	*	.....	.....	.....	585,000	Mar.	1869	.05
131	Savage, S.	Nev..	11,200,000	112,000	100	6,966,000	June	1893	.25	4,460,000	June	1893	3.00
132	Sierra Buttes, G.	Cal..	2,225,000	122,500	10	.....	.....	.....	.....	1,559,933	Oct..	1871	.12½
133	Sierra Nevada, S. G.	Nev..	10,000,000	100,000	100	6,521,910	Aug.	1893	.30	102,000	Jan.	1891	1.00
134	Silver Cord, S. L. G.	Colo..	4,500,000	450,000	10	.....	.....	.....	.....	265,000	April	1889	.10
135	Silver King, S.	Ariz..	10,000,000	100,000	100	97,479	Aug..	1892	.25	1,950,000	July	1887	.25
136	Silver Mg. of L. V., S. L.	N. M..	500,009	500,000	1	.....	.....	.....	.....	300,000	Dec..	1891	4.05
137	Small Hopes Con., S.	Colo..	5,000,000	250,000	20	*	.....	.....	.....	3,225,000	Oct..	1895	.10
138	Standard, G. S.	Cal...	10,000,000	100,000	100	100,000	June	1890	.50	3,761,159	Mar..	1795	.10
139	Swansea, G. S.	Colo..	600,000	60,000	10	.....	.....	.....	.....	39,000	Sept.	1893	.10
140	Tamarack, C.	Mich..	1,250,000	50,000	25	520,000	April	1885	3.00	4,070,000	Dec.	1894	4.00
141	Trinity Riv'r Hydr., G	Colo..	500,000	500,000	1	*	.....	.....	.....	37,500	Apr..	1894	.00
142	Union	Colo..	1,250,000	1,250,000	1	.....	.....	.....	.....	26,520	Dec..	1894	.00½
143	United Verde, C.	Aris.	5,000,000	300,000	10	*	.....	.....	.....	2 4,500	Jan..	1892	.10
144	Victor, G	Colo.	1,000,000	200,000	5	.....	.....	.....	.....	265,000	Feb.	1895	.05
145	Ward Con., S.	Colo..	2,000,000	200,000	10	.....	.....	.....	.....	40,000	Dec..	1886	.05
146	W. Y. O. D	Cal..	60,000	30,000	2	22,500	May.	1891	.10	95,000	Jan..	1895	.10
147	Yankee Girl,	Colo.	1,300,000	260,000	5	.....	.....	.....	.....	1,400,000	Sept.	1893	1.50
148	Yellow Jacket, G. S.	Nev.	12,000,000	120,000	100	556 000	July.	1893	.25	2,184,000	Aug..	1871	1.50

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Assessments. Date and amount of last.		
1	Alliance, S. G.	Utah.	$100,000	100,000	$1	$120,000	Feb..	1891	.1
2	Alloues, C.	Mich.	2,000,000	80,000	25	1,424,937	Oct..	1891	.10
3	Alpha Con., G. S.	Nev..	3,000,000	30,000	100	309,000	Sept.	1892	
4	Alta, S.	Nev..	10,080,000	100,800	100	3,369,88	Jan.	1892	.10
5	American Flag, S.	Colo..	1,250,000	125,000	1	300,000	June	1887	
6	Anchor, S. L. G.	Utah.	3,000,000	150,000	5	560,000	July.	1893	.5
7	Barcelona, G.	Nev..	5,000,000	200,000	5	*	.....	.....	.....
8	Belmont, G.	Cal..	500,000	500,000	100	*	.....	.....	.....
9	Belmont, S.	Nev..	5,000,000	50,000	100	735,000	April	1886	.10
10	Best & Belcher, S. G.	Nev..	10,080,000	100,800	10	2,405,275	Aug..	1892	.25
11	Black Oak, G.	Cal..	3,000,000	300,000	100	*	.....	.....	.....
12	Brownlow, G.	Colo..	250,000	250,000	5	.....	.....	.....	.....
13	Brunswick, G.	Cal..	2,000,000	400,000	2	.....	.....	.....	.....
14	Bullion, S. G.	Nev.	10,000,000	100,000	100	2,890,000	Aug.	1892	.25
15	Butte & Boston, C. S.	Mont.	5,000,000	200,000	10	.....	.....	.....	.....
16	Butte Queen, G	Cal...	1,000,000	100,000	1	6,000	Jan..	1892	
17	Calaveras, G.	Cal..	500,000	500,000	1	.....	.....	.....	.....
18	Calaveras Con., G.	Cal..	800,000	160,000	10	.....	.....	.....	.....
19	California, G.	Cal..	1,000,000	100,000	5	9,000	Mar..	1892	
20	California Con. L. Q.	Cal..	2,250,000	450,000	10	.....	.....	.....	.....
21	Challenge Con., G. S.	Nev..	5,000,000	50,000	10	.....	.....	.....	.....
22	Chollar, S. G.	Nev..	11,200,000	112,000	2	1,826,000	May.	1892	.5
23	Colchis, S. G.	N. M..	500,000	156,000	5	.....	.....	.....	.....
24	Colorado, S.	Colo..	1,625,000	325,000	1	.....	.....	.....	.....
25	Comstock, S.	Utah.	1,250,000	250,000	100	.....	.....	.....	.....
26	Comstock Tun.	Nev..	10,000,000	100,000	100	35,000	Mar.	1887	.10
27	Con. Imperial, G. S.	Nev..	5,000,000	50,000	50	2,062,500	Jan..	1892	.25
28	Con. New York, S. G.	Nev..	5,000,000	100,000	100	110,000	Mar..	1892	.10
29	Con. Pacific, G.	Cal..	6,000,000	60,000	10	198,000	June	1890	.10
30	Crescent, S. L.	Colo..	3,000,000	300,000	100	*	.....	.....	.....
31	Crocker, S.	Aris.	10,000,000	100,000	1	165,000	Aug.	1892	.05
32	Crowell, G.	N. C..	500,000	500,000	1	.....	.....	.....	.....
33	Dahlonega, G.	Ga....	250,000	250,000	10	*	.....	.....	.....
34	Decatur, S	Colo..	1,500,000	300,000	.....	.....	.....	.....	.....
35	Denver City S.	Colo..	5,000,000	500,000	11	*	.....	.....	.....
36	Denver Gold, G.	Colo..	300,000	60,000	5	.....	.....	.....	.....
37	Dickens-Custer, S.	Idaho	2,100,000	420,000	5	*	.....	.....	.....
38	Durango, G.	Colo..	500,000	500,000	1	*	.....	.....	.....
39	El Dorado, G.	Cal..	1,000,000	250,000	4	*	.....	.....	.....
40	Emma, S	Utah.	625,000	500,000	125	.....	.....	.....	.....
41	Emmons, S. L.	Colo..	2,000,000	2 000,000	1	.....	.....	.....	.....
42	Empire, S.	Utah.	10,000,000	100,000	100	.....	.....	.....	.....
43	Eureka Tunnel, S. L.	Nev...	10,000,000	100,000	100	*	.....	.....	.....
44	Exchequer, S. G.	Nev...	10,000,000	100,000	100	940,000	Jan..	1892	.25
45	Found Treasure, G. S.	Nev...	10,000,000	100,000	100	130,500	Jan..	1892	.50
46	Gogebic I. Syn., L.	Wis..	5,600,000	200,000	25	.....	.....	.....	.....
47	Gold Cup, S.	Colo.	500,000	500,000	1	*	.....	.....	.....
48	Golden Era, S.	Mont.	1,000,000	200,000	10	*	.....	.....	.....
49	Gold Flat, G.	Cal	1,000,000	100,000	10	5,000	Mar.	1892	.05
50	Gold Rock, G.	Cal.	1,000,000	500,000	2	.....	.....	.....	.....
51	Golden FeatherCa., G	Cal..	900,000	180,000	5	.....	.....	.....	.....
52	Goodyear G. S. L.	Mont.	1,000,000	200,000	5	13,000	Feb..	1892	.01
53	Grand Duke, S.	Colo.	800,000	80,000	10	.....	.....	.....	.....
54	Gregory Con., G.	Mont.	3,000,000	300,000	10	.....	.....	.....	.....
55	Harlem M. & M. Co., G.	Cal..	1,000,000	200,000	5	.....	.....	.....	.....
56	Hartery Con., G.	Cal..	1,000,000	100,000	10	22,000	Oct..	1890	.05
57	Hartshorn, G. S. L.	S. Dak	1,250,000	250,000	5	6 750	Sept.	1891	.00
58	Head Cent. & Tr., S. G	Ariz..	10,000,000	100,000	100	16,981	Mar..	1892	.03
59	Hector, G.	Cal..	1,500,000	300,000	5	45,000	Jan..	1889	.18
60	Himalaya, G. & S.	Utah.	1,800,000	80,000	10	12,800	Oct.	1892	.00
61	Holywood	Cal..	200,000	100,000	2	.....	.....	.....	.....
62	Huron, C.	Mich..	1,000,000	40,000	25	280,000	May.	1887	3.00
63	Idaho, G. S	Idaho	1,250,000	250,000	5	.....	.....	.....	.....
64	Ingalls, G	Colo..	100,000	20,000	5	.....	.....	.....	.....
65	Ironton, I.	Wis..	1,000,000	40,000	25	.....	.....	.....	.....
66	Iroquois, C.	Mich..	1,250,000	50,000	25	.....	.....	.....	.....
67	Kentuck Con.	Nev..	10,500,000	105,000	00	57,750	July	1892	.10
68	Julia Con., G. S.	Nev...	11,000,000	110,000	100	1,463,000	Jan.	1888	.10
69	Justice, G. S. C.	Colo.	500,000	500,000	1	*	.....	.....	.....
70	Lacrosse, G.	Colo..	1,000,000	100,000	10	*	.....	.....	.....
71	Little Josephine, S.	Colo..	250,000	50,000	5	.....	.....	.....	.....
72	Lone Star Cons., G.	Cal..	500,000	500,000	1	10,000	April	1892	.40
73	Madeleine, G. S. L.	Colo.	750,000	50,000	1	4,500	Feb.	1892	.06
74	Mammoth Gold, G.	Ariz..	2,500,000	500,000	5	*	.....	.....	.....
75	Mayflower Gravel, G.	Cal..	1,000,000	100,000	10	*	.....	.....	.....
76	Mexican, G. S.	Nev..	10,000,000	100,000	100	2,917,560	ct.	1892	.50
77	Michigan, G S	M